Massachusetts Medical Society

SYMPOSIUM ON THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS.*

MEETING OF THE SECTION OF TUBERCULOSIS, JUNE 9, 1914.

I. Treatment of Hemoptysis in Pulmonary Tuberculosis. By Newell B. Burns, M.D., North Reading State Sanatorium, North Wilmington, Massachusetts.

II. The Present Status of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. By
- *A.* Cleaveland Floyd, M.D., Boston.
- *B.* James A. Lyon, M.D., Rutland State Sanatorium, Rutland, Massachusetts.
- *C.* H. D. Chadwick, M.D., Westfield State Sanatorium, Westfield, Massachusetts.
- *D.* F. T. Lord, M.D., Boston.

III. The X-Ray as an Aid to the Diagnosis of Pulmonary Tuberculosis—papers presented by:
- *A.* P. Challis Bartlett, M.D., Boston, late Superintendent of the Rutland State Sanatorium.
- *B.* H. W. Van Allen, M.D., Springfield.
- *C.* Philip H. Cook, M.D., Worcester.

IV. Diagnosis and Treatment of Tuberculosis in Childhood—papers presented by:
- *A.* Walter C. Bailey, M.D., Boston.
- *B.* Walter J. Dodd, M.D., Boston.
- *C.* Richard M. Smith, M.D., Boston.

General Discussion.

I.

TREATMENT OF HEMOPTYSIS IN PULMONARY TUBERCULOSIS.

BY N. B. BURNS, M.D., NORTH READING, MASS.

THIS paper is intended to include briefly the essential facts pertaining to the treatment of pulmonary hemorrhage at the North Reading State Sanatorium, and the results that have been observed.

Although the treatment may vary in detail according to the stage of disease which the patient may have reached, or according to complications and individual peculiarities, there are, however, certain indications commonly present. These are for:—

(1) Absolute rest, the patient surrendering all effort to those in attendance.

(2) The immediate lowering of the blood-pressure.

(3) The determination of blood to parts of the body other than the lungs, this indication calling for—

(*a*) Application of cold to the thorax; and

(*b*) Purgation of the intestinal tract.

(4) The positive assurance to the patient that he is in no danger.

The dissipation of this important psychic element and the doing away with the panicky fear and demoralization which seizes upon the average patient will result in better coöperation in carrying out the prescribed orders for rest and so forth.

Applying these principles to an actual case, the following procedure would be in order:

The patient is placed in a semi-recumbent position, usually flat on his back, with curved basin at side of face for expectoration. Nitroglycerin 1-100 grain dose under the skin is immediately given from an emergency hypodermic unit. An ice bag is placed on the chest and cracked ice is given by mouth for a few minutes.

This should not be continued indefinitely after the initial excitement is passed, for the ice bag is likely to cause trouble if applied for more than an hour at a time.

In the meantime the physician quietly encourages the patient, telling him that very few patients ever die as a direct result of hemorrhage and that he will suffer no serious consequences provided he obeys his instructions implicitly. This advice is based upon the fact that only ten patients have died of hemorrhage at North Reading since the institution was opened in 1909. In those ten cases all was over in a very short period and too quickly for any treatment to have effect.

Morphin is given with great reluctance and only in hopelessly advanced cases, where the sole indication is to preclude all possible suffering. If this drug is used as routine there occurs a secondary stage of trouble as soon as the hypnotic effect wears away.

After heavy doses of morphin, the lung congestion seems intensified, while the blood-pressure remains undiminished or is even increased, and the effect of the nitroglycerin is neutralized. In addition to this there is increase in the constipation common to hemorrhage cases. We have occasionally found post-hemorrhagic pneumonias following morphin therapy and we have seen a patient nearly drowning in his own blood under this treatment.

When the hemorrhage is so extensive that the blood rushes into the bronchial passages of the well lung, causing dyspnea and cyanosis, it is best to turn the patient on his side with his head over the edge of the bed, allowing gravity to exert its influence in withholding the blood in the lung the worse diseased.

We wish to emphatically discourage the routine use of morphin in the usual case of hemoptysis. It seems far better to open the intestinal tract freely in such cases. We use magnesium sulphate in full doses, provided there are no positive contraindications, as extreme asthenia, enteritis, or any ulceration in the bowels. Troublesome sequelae common to other methods

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of treatment are avoided and the patient comes out of the attack in brighter condition and with a clean gastro-intestinal tract ready to assimilate simple nourishment.

No solid food is to be given for some hours after the initial attack, but cold milk or cold bouillon can be taken in small amounts at regular intervals. A drachm of lime water is added to each eight ounces of milk to improve its digestibility and to add to the body's calcium content. Continued use of milk is tiresome to the patient and its constipating effect is marked. In talking over the matter of diet with patients having recovered from hemorrhage attacks, I find that cold bouillon, if properly made, cold gruel, and malted milk are the most popular of the liquid nourishments. At the end of eighteen hours, barring recurrence, or heavy streaking, soft solids may be given.

The matter of diet is very important in the after-treatment, for with an excess of food and improper kinds, a recurrence of hemorrhage is invited, whereas too much starving of the patient results in loss of weight and strength, and a longer period of convalescence. In the meantime, the patient is kept as quiet as possible. If an aggravating cough is present, small frequent doses of codein or heroin may be given, and with impunity so long as the bowels are kept open.

Sodium nitrite and calcium sulphide each in one grain doses may be administered to the patient at three to four-hour intervals for from twenty-four to forty-eight hours. Subsidence of streaking, as well as severe headache, call for discontinuance of sodium nitrite.

We usually give two doses of one ounce each of magnesium sulphate, one soon after the initial attack, and another on the second day. It is not best to continue this form of treatment beyond the two doses.

One week in bed with entire absence of streaked sputum is the requirement necessary before the patient is allowed up and about to any extent.

It must be borne in mind that constipation is the great obstacle in dealing with hemorrhage cases. Relief of this trouble shortens hemorrhage attacks and is a strong preventive measure when the latter are apparently impending, as may sometimes be evidenced by pain in chest at a particular point, streaked sputum, and a general feeling of malaise such as certain patients have learned to regard as usually prognosticating hemoptysis. Consequently, we have emphasized this need to certain patients coming to us with histories of hemorrhage, and they have not only confirmed our belief with statements of their own experience, but have also brought about an abatement of their hemoptysis. One remedy for chronic constipation in these cases particularly reliable for use in the long run is oatmeal gruel taken in the evening. Its laxative and altogether harmless effects are worthy of mention for use among tuberculous patients, especially with hemorrhage tendency.

For the past six months we have seen very few hemorrhages at North Reading State Sanatorium as compared with past years. This, too, in the face of a marked increase in number of bed cases treated. Ordinarily, hemorrhages in the spring months were quite frequent, but this season we seem to have escaped the usual number of such distressing complications. This happening may be due to the better coöperation on the part of the patients under the sanatorium-hospital class system, an outline of which was presented by Dr. Bailey before the recent meeting of the National Association at Washington.

Then again the preventive measures already spoken of have been effective, which in itself is commendatory of this form of treatment.

I have herein outlined only one simple method of treating hemoptysis, without reference to the use of astringents, styptics, and other medicaments mentioned in the usual text-book description.

DISCUSSION.

DR. JOHN B. HAWES, 2ND, Boston: I am glad to comment on this method of treating pulmonary hemorrhage which Dr. Burns has been carrying on at the North Reading State Sanatorium. At an institution of this kind there are opportunities for finding out the value of any given method of treatment which those of us who do not have our patients so fully under our personal supervision do not have. Therefore I feel that any method of treatment which comes from North Reading State Sanatorium, where it has been tried out so long and carefully is worthy of the most serious consideration.

I cannot feel, however, that morphin should be entirely discarded. There are two classes of cases which are subject to hemorrhage,—the first is the active case, running a high temperature and pulse, what we know as the progressive, active case of tuberculosis. There I agree entirely with Dr. Burns that the active catharsis is a very important thing.

There is another type of case with which I have come more into contact,—that is the fibroid case, where the patient is apparently active and well, without symptoms in the interval between hemorrhages, without fever, with a normal pulse, and going about his or her regular work when a hemorrhage occurs. In such a case as this there is really no lighting up of a tuberculous process in the lungs. I feel that in this type of case morphin does play a definite part and perhaps a major part in controlling not the hemorrhage itself but the disturbed mental attitude of the patient. I do not see why it is not perfectly possible to give small doses of morphin and yet to keep the intestinal tract open.

I think in this method of treatment as in others there must be modifications to suit the individual case, but I am sure that Drs. MacCorison and Burns have made a distinct step in advance in showing us the way in handling this most dis-

tressing of all symptoms in pulmonary tuberculosis.

Dr. F. P. McCarthy, formerly of Boston Consumptives' Hospital, Mattapan. I might say that our results at the Consumptives Hospital at Mattapan as to the number of deaths from hemorrhage according to the total number of deaths, correspond very closely to those of Dr. Burns. Out of 400 deaths which we had in two years during my régime, we had 7 deaths from hemorrhage.

There is one remedy that has not been mentioned here, which I think is of distinct value, namely, the use of fresh animal sera, preferably rabbit serum. I have had occasion to use this serum on several cases with apparently good results, and when we understand the pathology of pulmonary hemorrhage, when we appreciate what little value treatment has in the majority of severe cases, an agent that will tend to increase the coagulability of the blood should not be laid aside and eliminated in the treatment. The actual picture in the vast majority of severe hemorrhage cases is first the presence of a small or large cavity; a vessel running across this cavity is usually ruptured and the cavity is very often filled with blood. Nature herself in the vast majority of cases controls the hemorrhage by the formation of a blood clot within the cavity, and as a result the coagulability of the blood on the end of the ruptured vessel is caused by a pressure of this clot. Now any agent that will tend to increase the coagulability of the blood is indicated, and the use of fresh rabbit serum in 15 c.c. doses, repeated as often as 4- or even 3-hour intervals in severe cases of bleeding, I should strongly recommend. Rabbits can be kept in connection with an institution very readily, and more convenient, than one can obtain serum in private practice. Fresh rabbit serum could be kept constantly on the ice and used for this purpose.

Dr. G. M. Balboni, Boston: There is one thing that has not been mentioned in the treatment of pulmonary hemorrhage in this discussion, that is artificial pneumothorax. In cases where the hemorrhage is from one lung, if you are able to inject nitrogen into the pleural cavity of the bleeding lung the hemorrhage will be immediately controlled. I have done so in four cases. One, my first case, was a young farmer out in Arlington. He started with a brisk hemorrhage and continued to have brisk hemorrhages for two weeks. When I saw him he was going down hill fast. I was able to inject into the left pleural cavity of this patient at one sitting 1800 c.c. of nitrogen. The hemorrhage was completely controlled. Later I injected more nitrogen and he never had any more hemorrhages. The lung, four months later, completely re-expanded and it is now three years since that patient was injected and he is well. That was my first experience with artificial pneumothorax in pulmonary hemorrhage. I later had three other cases which were also unilateral cases, where it was not possible to control the hemorrhage by morphin and rest, and the other methods that the physicians had used. In these three cases the hemorrhage was completely controlled by nitrogen injection and no ill effect came from the extra work thrown upon the other lung. It is to be understood that if it is to be used you must have a free pleural cavity or one that is sufficiently free to compress the bleeding lung so as to stop the hemorrhage. Another point also is that you must be sure that the lung you are compressing is the one that the bleeding comes from. Also that there is no active disease in the other lung, otherwise a large amount of nitrogen injected into a pleural cavity may aggravate or start up a process on the non-compressed lung. If the non-compressed lung is healthy there is no danger.

Of course in doing this the patient is to be told what the object is and what he is to expect from it. Once you have commenced treating the lung you are not to stop by having stopped the bleeding, but you are to continue treating the lung for an indefinite period so as to bring about fibrosis. In these four cases my patients have had no ill effects. Of course the other side was fairly healthy.

We can say then that success in the treatment depends:—

1. On knowing from which lung the bleeding comes.

2. On a free pleural cavity or one that is sufficiently free to allow enough nitrogen to be introduced so as to control the bleeding, not more than 1000 c.c. of nitrogen will be necessary at one injection. Later more nitrogen may be injected, depending on the symptoms.

3. It is essential that the "other lung" be sound and that there be no cardiorenal disease.

With a perfect technic the dangers are practically nihil.

Dr. F. T. Lord, Boston: Concerning the use of morphia in the treatment of hemoptysis, it seems to me that it should be used with caution and only to meet certain indications. The danger of hemorrhage is largely due to extension by the effused blood of the tuberculous process into previously uninfected parts of the lung. Of 218 cases of hemoptysis occurring at the Massachusetts General Hospital and the Channing Home, death occurred in ten, and of these only three died as the immediate result of the bleeding, while the remaining seven died of apparent extension of the tuberculosis as a direct consequence of the hemorrhage. The use of morphia has both advantages and disadvantages. Cough may be necessary for the expulsion of blood which otherwise is retained in the air passages and leads to further infection. Morphia may be harmful in cases of this type. On the other hand, expulsive efforts with cough may dislodge a partially adherent thrombus and thus maintain or renew the bleeding. It seems to me, therefore, that morphia should be used only for the purpose of checking irritative and unproductive

cough or in rare instances to quiet extreme nervousness and we should appreciate that it may do more harm than good in certain cases.

DR. H. D. CHADWICK, Westfield State Sanatorium: My method of treating hemorrhage is somewhat different from that in vogue in the the other sanatoria in regard to the posture of the patient. Instead of having the patient recumbent I always sit him up the first thing. That is treatment that I have followed out for eight years. I can vouch for the greater comfort of the patient and I am sure that the hemorrhage is lessened in amount and will stop quicker than when the patient is kept lying down. It is difficult to raise blood when one is lying flat on one's back. It is much easier when one is sitting up. Logically, it seems to me that the proper position is to sit up with as many pillows as necessary behind the back, and thus keep the patient where he can expectorate the blood with the least effort as it comes into the throat. I use morphin only when the hemorrhage is profuse and continuous. I prefer heroin once in four hours to prevent unnecessary irritating cough.

II.

THE TREATMENT OF PHTHISIS BY PULMONARY COMPRESSION.

BY CLEAVELAND FLOYD, M.D., BOSTON.

DURING the past three years the rapid extension of the use of artificial pneumothorax as a therapeutic measure in the treatment of various pulmonary diseases has been very marked. The present status of this method in the treatment of phthisis is one of recognized value. Like so many other measures however, which have been used for the control of pulmonary tuberculosis, its continued favorable acceptance by phthisiologists depends upon three things: first, a rational method of procedure; second, care in the selection of cases to be treated; and third, correct interpretation of pulmonary changes which would warrant a suspension of the treatment in those cases favorably influenced by it. Most men, as is the case with many surgical procedures, in performing pulmonary compression gradually evolve a technic of their own. At the present time, however, there seems to be little difference of opinion in regard to the method of procedure in the production of artificial pneumothorax. While a few men still carry out the method of Brauer of making an open incision in the chest wall as a preliminary to their injection of nitrogen gas into the chest cavity, the accumulated experience of many other observers would seem to show this to be unnecessary.

Careful physical examination supplemented by x-ray examination will in the majority of instances correctly determine the condition of the pleural cavity. The insertion of the needle into the chest where the movement of the lung indicates freedom from adhesions, and the x-ray shows the possibility of its compression, will almost always be successful without attendant mishap or the failure to reach the pleural cavity. As has been well said, "most failures as well as complications arise subsequent to the initial injection," and it is very surprising that often the second inoculation is entirely unsuccessful in the same region where the first has been accomplished without difficulty. It is an accepted fact that a close study of the variations of the manometer is of prime importance in directing the inflow of nitrogen. This is true not only of determining where the point of the injection needles lies but also as to the amount of positive or negative pressure remaining in the chest cavity at the time of injection and its rise or fall depending upon increase of pleural tension or the giving away of the lung before the inflowing nitrogen. The manometer also is an accurate measure in millimetres of water or mercury of the pressure applied to the lung. In those cases where the nitrogen treatment has been used for some time, and the operator is thoroughly cognizant of the strength of pleural adhesions with which he is contending, or the unyieldingness of a partly consolidated lung, the amount of force used to drive in the nitrogen may be very considerable. Very few cases have occurred where the pleura has ruptured and the nitrogen has forced itself into the mediastinum, but frequently subcutaneous emphysema follows vigorous compression. In certain cases the manometer will show in different sections of the chest considerable variation in the amount of pleural tension, indicating definite division of the pleural cavity from pleural adhesions. When this is the case it may be necessary to introduce nitrogen into the chest at more than one point to get an adequate amount of pulmonary compression. The amount of nitrogen given and the interval of repetition of injections should be largely governed by the conditions in each individual case. In general, small amounts of nitrogen (300-500 cc.), given at a few days' interval until collapse of the lung is complete or until all symptoms have disappeared seems to be the best method. Entire collapse of the lung will be obtained in relatively few cases, especially if the process in the lung is of any standing. Furthermore, it is often necessary to collapse but a portion of the lung to drive more blood into the affected part and thus stop all activity on the part of the lesion. Where the required amount of collapse of the lung has been obtained, the interval of injection of nitrogen and the amount to be given should be wholly determined by two factors; namely, the persistence of symptoms, or their recurrence, and the tension under which the nitrogen remains in the chest. The return of cough and expectoration or the increase of temperature after its cessation demand an early injection of nitrogen. Where these symptoms persist in spite of vigorous compression of the lung the frequent and prolonged use of nitrogen

is important to get them under control. Many cases are not brought to a successful termination because the operator despairs too easily of obtaining results. This is especially the case where there is an extensive development of adhesions or a resistant lung is encountered. Where an interval of time between injections is chosen which allows the nitrogen that has been previously introduced into the chest cavity to become so far absorbed that it does not constantly exert positive pressure upon the lung as shown by the manometer, the length of time has been too long. At the close of each introduction of the gas into the chest, positive pressure should then be recorded except in the first few injections where the lung is rapidly receding.

Of prime importance in the successful use of pulmonary compression is the proper selection of patients for the treatment. This is especially true in cases of pulmonary tuberculosis. It cannot be too often emphasized that this therapeutic method may accomplish one of two things; first, prolonged relief of symptoms, or second, the arrest of the pathological process. In the latter case the strictly unilateral pulmonary lesion, free from adhesions is the only one where this can be anticipated. Cures will be secured in bilateral cases, but here the outlook is always one of doubt in the beginning. Where both lungs are active a nicety of judgment is required to terminate such cases successfully.

For the relief of symptoms the range of cases that can be so treated is limited only by the condition of the pleural cavity. The incipient case, which in the judgment of most men should be excluded from the group of cases that are suitable for artificial pneumothorax, has, nevertheless, where it has been thus treated, frequently shown rapid termination in recovery. Pleurisy with effusion complicating a moderately active lesion upon one side offers a good field for treatment. Cases of miliary tuberculosis have not as yet been treated in sufficiently large numbers to allow an adequate opinion to be formed as to the results that can be expected.

Active, rapidly advancing phthisis complicated by secondary infection is frequently unsuited for this method of treatment. The same is true of long standing fibroid phthisis accompanied by a weak heart. The collapse of cavities may be occasionally accomplished, but in most instances the effort is only partially successful. No case of pulmonary tuberculosis should be selected for treatment with artificial pneumothorax entirely upon evidence secured from the chest. Many a case which is a favorable one for complete cure, if judged alone from pulmonary signs may prove entirely unsuitable where the patient has a high-strung nervous temperament. Apprehension of and lack of confidence in this method will frequently prove to be the deciding factor against success in many cases.

With the cessation of active symptoms as the result of pulmonary compression, most observers depend upon pulmonary changes for guidance as to when to terminate the continuation of nitrogen. It is obvious that there will be many cases in which it will be found impossible to wholly stop the symptoms of phthisis and these must be treated systematically for a considerable period of time until the general physical condition is good and the damaged lung is restricted by the formation of adhesions. In the other series of cases, however, where after six or more injections temperature has disappeared, cough and expectoration have ceased, it is most important for the ultimate outcome of the case to know what method to pursue in regard to the further use of nitrogen. Where the x-ray shows a considerable degree of pulmonary collapse with a large quantity of nitrogen in the chest which is under positive pressure, it is best to continue this condition for a period of three months before allowing any expansion of the lung. This may mean several injections of nitrogen during this interval to hold the lung in a collapsed state. Where three months have elapsed without the return of any active symptoms and an examination of the chest during this time shows a disappearance of all moisture, it will then be possible to allow a gradual re-expansion of the lung. This should not be accomplished by withdrawing the nitrogen present, but by keeping a gradually decreasing amount of nitrogen in the chest, thus allowing the lung slowly to reoccupy the pleural cavity as far as pleural adhesions will allow. During the period of re-expansion of the lung it may at times be found necessary on account of the re-appearance of active symptoms to again carry the collapse of the lung to the extreme point which it formerly attained. Occasionally after a considerable interval in which there has been a disappearance of the artificial pneumothorax it may be found necessary in exceptional cases to resort again to this method of treatment on account of the lighting up of the process either in the treated lung or in the other side of the chest. New formation of adhesions may make this difficult or almost impossible and only energetic use of nitrogen under pressure will give results.

Following the arrest of tuberculosis as the result of artificial pneumothorax, examination of the lungs will show it frequently much limited in its capacity for expansion. Voice and respiratory sounds are often diminished in intensity and quality and resistance over the involved area to percussion may be considerably increased. The other lung will show compensatory hypertrophy occupying a large portion of the pleural cavity and having exaggerated breath sounds over its entire area, with full expansion of its borders. The position of the heart will depend entirely upon whether the previously established pneumothorax has been sufficiently absorbed to produce a condition of negative pressure in that side of the pleural cavity.

While at the present time artificial pneumothorax has become a well established therapeutic measure, its field of application has slowly nar-

rowed with its use. This is not only true on account of a relatively small number of cases that are really suitable for this method of treatment, but because it is a measure most adapted for patients having institutional care. It does not replace by any means those measures for increasing general bodily vigor such as fresh air, good food and rest, but it can supplement these in a limited number of cases.

It is a procedure which not only demands some skill in its application but most of all an intimate knowledge of phthisis and the pathological changes which it may bring about in the pleural cavity.

It is without doubt a real step in advance in physical therapeutics in the treatment of many pulmonary conditions, and as it is based upon sound clinical and pathological observations I believe it is destined to have a permanent place in the treatment of pulmonary tuberculosis.

III.

THE PRESENT STATUS OF ARTIFICIAL PNEUMOTHORAX THERAPY.

BY JAMES A. LYON, M.D., RUTLAND, MASS.,

Assistant Superintendent and Physician, Rutland State Sanatorium, Rutland, Mass.

IN August, 1911, a number of patients at the Rutland State Sanatorium were selected to test the value of artificial pneumothorax therapy as associate treatment in pulmonary tuberculosis. Since that time we have subjected 74 patients to this form of treatment, and the results obtained form a part of this paper.

Of the 74 cases treated, 4 were in the incipient stage of their pulmonary disease, 38 were moderately advanced, and 32 were in the far advanced stage. Of the above 4 incipient patients, 1 had bilateral disease, and 3 had unilateral involvement. In all 4 instances there was marked improvement following the treatment.

Of the 38 moderately advanced cases, 5 had unilateral disease, and in 33 it was bilateral. In the 5 instances where the disease was confined to one lung, 3 were benefited by the treatment, and 2, on account of extensive pleural adhesions, failed to show any signs of improvement. Twelve of the 33 patients, whose disease involved both lungs, showed satisfactory improvement, and 21 failed to respond favorably to the treatment.

On account of recrudescence in the uncollapsed lung, the treatment was discontinued in 7 of the above 21 cases; in 7 more it was also abandoned because of dense pleural adhesions. In 2, the reason for stopping it was the extreme nervousness following each treatment; in another, shock was the reason; and 1 was on account of the occurrence of a hemorrhage in the untreated lung. In another instance, we discontinued, the treatment because of an acute attack of appendicitis, in which case the appendix was removed, and following this, the patient rapidly declined. The treatment was discontinued in still another, because of uncomfortable symptoms which followed, and the remaining case died from what was undoubtedly a rupture of the visceral pleura.

There were 32 in the far advanced stage of their pulmonary disease, and of this number, 4 were suffering from unilateral involvement, and 28 had the disease in both lungs. Of the 4 unilateral cases, 1 suffered from a spontaneous pneumothorax, and the treatment was given in this instance to relieve the distressing symptoms present. On admission the patient was critically ill. His life was prolonged for a period of four months and the lung was kept in a collapsed condition by repeated introductions of nitrogen gas. Death was sudden, and was, in all probability, due to aortic syncope. The 3 cases remaining were unsuccessful, because of extensive pleural adhesions.

Three of the 28 patients suffering from bilateral disease were improved by the treatment, and 25 failed to improve. In the 25 instances where the treatment was unsuccessful, it failed in 9 on account of recrudescence in the uncollapsed lung. In 8 there were marked adhesions, preventing even a moderate collapse; 3 became too nervous to continue with the treatment, as they lost weight rapidly and suffered from dyspnea and insomnia. In 2 cases the treatment was abandoned because, on each occasion when we attempted to introduce even a small amount of gas, they suffered from extreme shock. Two patients refused to continue with the treatment because they became extremely nervous following it, and one died of acute cardiac dilatation and pulmonary edema.

You are all familiar with the alarming complications which frequently follow an extensive pulmonary hemorrhage,—the sudden rise of temperature, dyspnea, rapid pulse, the extension of infiltrated areas and the softening of lung tissue. Indeed, many of these patients seemed to have taken on a form of septic pneumonia and to have gone into a rapid or gradual decline. There were nine occasions on which the treatment was given to control these hemorrhages, and it was successfully carried out in each instance. Unfortunately, one of these patients developed a hemorrhage from the opposite lung and the treatment had to be discontinued.

Of the above-mentioned cases, four were suffering from pleurisy with effusion, and we removed the pleural exudate, replacing it with sterile nitrogen gas. On each occasion the treatment was successfully carried out, and we have maintained the collapsed condition of the lung by continued introductions of gas.

In general it may be said that 23, or 31%, of the 74 patients coming under our observation were benefited by this form of treatment, and that 51, or 69%, received no benefit from it. All the above-quoted cases failed to improve after several months' residence under the usual sanatorium treatment, and the prognosis in each instance was either questionable or unfavorable.

In those cases, therefore, where failure is recorded we have attributed it, not to the underlying principles on which the treatment is based, but rather to the miscarriage of one or more of those elusive elements which help to make the question of artificial pneumothorax therapy a far more complex and formidable study than is generally supposed, and into some details of which, we are only beginning to obtain an insight. We refer to the element of error in even the most rigid application of our present technic of sterilization, to the degree of temperature of the gas, to the rapidity with which it is introduced, and to the question of proper dosage. Also of vital importance is the proper selection of cases, and the reactive power of the individual treated.

Indeed, one of the earliest lessons which our experience teaches is the conviction that there should be no such thing as fixed numerical doses. Each individual is a problem in himself, and no attempt should be made to have a fixed rule for the amount of nitrogen gas introduced.

Spontaneous improvement, even in advanced tuberculosis, is by no means an unknown phenomenon, and the suggestive element in regular, repeated hypodermic injections, even of nothing but sterile water, is a force to be reckoned with. Against the value of the failure of similar improvement in untreated control cases may be urged the lack of identity in the clinical course of any two cases of phthisis, the variable and important element of individual immunity and individual resistance, and the possibility of coincidence, which is ever present.

When we state, therefore, that the apparent clinical results following the intelligent, persistent and discriminate application of artificial pneumothorax therapy in certain cases of pulmonary tuberculosis, are improvement in general health, gradual fall in the evening temperature, the return of appetite, increase in body weight, and a gradual lessening of cough and reduction of sputum, we do not mean to recommend the use of artificial pneumothorax therapy as a panacea or infallible remedy applicable to all cases.

Indeed, the results are often contradictory and disappointing, and, as we have previously indicated, there is still much to learn. Not only is the somewhat general dictum that "artificial pneumothorax therapy can do no harm even though it should fail to benefit," fallacious in the light of our experience, but we are convinced that just as definite and serious damage may result from its careless or ignorant administration as from tuberculin.

IV.

Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.

By Henry D. Chadwick, M.D., Westfield, Mass.

My personal experience with pneumothorax began in August, 1912. Since then I have applied this method of treatment to 43 patients, 21 men and 22 women. Nine of these have had but from one to five treatments each, having been under treatment but a short time when it was discontinued for various reasons. On account of the short duration of treatment, they will not be included in this discussion. Of the 34 patients left for consideration, 3 were classified on admission as second stage, or moderately advanced, 31 as third stage, or advanced cases. Approximately 400 doses of nitrogen have been given. The average dose the first year of my work was 800 c.c. This past year it has been about 500 c.c. I have found that small doses administered more frequently cause no discomfort and are rarely followed by febrile reaction. The period between doses is about seven days until as complete a pneumothorax as possible is obtained. The interval then may be from two to four weeks. I am guided in this, somewhat, by the feelings and symptoms of the patients. They often say that they need another dose of gas because they are beginning to be wheezy, or that they cough or raise more, or feel less energetic.

The rapidity with which the gas is absorbed varies greatly with different patients, and for this reason the interval between doses must be worked out with each individual under treatment.

But 9 of the 34 cases were unilateral. The others had some inactive disease of the other lung. The right lung was compressed in 19 and the left lung in 15. In two cases both lungs were treated, at different intervals. The latter were bilateral cases in which renewed activity in the non-compressed lung made it advisable to change sides after an interval of several weeks, during which time the collapsed lung expanded. One of these cases, a colored man, was very much benefited by this procedure. He was very sick when we began this treatment and his restoration to even a fair degree of health was unexpected. He was discharged last October and when recently heard from was feeling quite well.

Results.

Twenty-two showed improvement of varying degree. Six were previously doing well, leaving 16 who were undoubtedly benefited by nitrogen treatment. Eight patients showed progressive

disease, and the condition of 4 others was stationary; 2 patients died after leaving the sanatorium. This is a small percentage when you consider that all but 3 were in the third stage of the disease, and that two-thirds of them have been under observation and treatment for more than a year.

WEIGHT.

Of the 12 who increased in weight, the largest gain was 21 pounds. The others varied from one to seventeen pounds. Of those who gained, 8 were women and 4 were men. Of the 22 who lost, 14 were men and 8 were women. The loss of weight in each instance was small, with the exception of one woman, who lost 21 pounds. She was losing steadily before treatment was commenced. Notwithstanding this loss of weight, she is feeling better and stronger and her temperature is lower. A small loss of weight during the first weeks of treatment is a frequent occurrence, but is usually soon regained.

COMPLICATIONS.

Two patients developed tuberculous pneumonia while under treatment. One of them had a small fresh focus of disease in her right lung and was running a temperature of from one to two degrees above normal for six weeks before we began treatment of her left lung, which was entirely involved. After five doses of gas she developed a tuberculous pneumonia on the right side, which ran a typical course. Her temperature subsided after four weeks and the gas treatment has been continued with gratifying results.

The other case developed tuberculous pneumonia immediately after the first injection of nitrogen. For the two weeks preceding this treatment he had symptoms of an active process in the lung, and it is quite probable that this pneumonia would have developed if the lung had not been compressed. After the acute symptoms had subsided, treatment was resumed without further difficulty.

Three doses were given to a patient with hemoptysis, but apparently it had no effect upon controlling the hemorrhages.

Emphysema about the point of puncture is not an infrequent occurrence when a dose causing considerable plus pressure is given. It causes very little discomfort and soon disappears. A two-inch strap of adhesive plaster placed over the puncture will usually prevent much gas escaping.

Only one instance of anything simulating pleuritic shock has been observed. This occurred in a highly nervous patient who had received two doses without untoward symptoms. When the needle was inserted for the third treatment and before any gas was allowed to enter, she suddenly relapsed into unconsciousness and showed the usual symptoms of shock. After a few minutes she recovered. No further attempt was made to continue the treatment.

Pleuritic shock can be avoided with careful local anesthesia with one per cent. solution of novocain, taking special care to use a needle long enough to penetrate the parietal pleura, so that the solution can be injected through its wall.

Effusion. Six patients developed pleuritic effusion while under treatment. This condition is often ushered in by a sudden rise of temperature. The fluid is usually clear serum but may later become cloudy. On culture it is found to be sterile. I am unable to see that these cases are any worse for this complication. On the contrary, the presence of fluid aids compression and the injections of gas, as a result of this, may be made at longer intervals.

CASES SUITABLE FOR TREATMENT.

The results obtained by this treatment depend upon whether the diseased area of the lung can be partially or wholly collapsed. When there are tough adhesions, a marked thickening of the pleura, or a fibroid lung, effective pneumothorax cannot be produced, and as the respiratory conditions will be very little changed a marked result cannot be expected. Whether suitable conditions exist, only a trial will determine, as some old standing cases are unexpectedly benefited.

A patient in any stage of disease, if a unilateral case, should have the benefit of an induced artificial pneumothorax if they do not show marked improvement under good sanatorium conditions in a reasonable period of time. Careful selections may be made from the bilateral cases who are not improving, if in one lung the disease is apparently inactive. The benefits frequently noted are lessened cough and sputum, lower temperature and slower pulse-rate. The patients often express themselves as feeling less tired and more energetic. They are able to sleep better because they cough less at night. Lessened absorption of toxines probably accounts for the improvement in their general condition.

I have not had experience in treating first-stage cases with artificial pneumothorax, as Murphy has recommended. Cases of that class, usually respond well to sanatorium treatment. If, however, a patient proved to be a progressive case, although it was at an early stage, I should advocate induced pneumothorax without much delay.

In my opinion it is a method of treatment of much value in carefully selected cases, but it should be given only to such patients as can be kept under close observation and under sanatorium conditions.

V.

Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. Should the Method be Used?

By Frederick T. Lord, M.D., Boston.

I hesitate to discuss this subject for two reasons. In the first place I have had no personal experience with the method, and in the second place certain objections which I shall presently mention may seem to introduce a discordant note into the discussion.

In support of the method it may be assumed that immobilization of the affected lung is favorable to the arrest of a tuberculous process. It should be remembered, however, that the collapse of the affected lung in consequence of artificial pneumothorax must of necessity affect the more nearly normal parts of that lung owing to the more rigid character of the infiltrated regions and the frequency of overlying pleural adhesions. The effect of maintaining normal parts of the lung in a collapsed condition for long periods of time is an important consideration. Following the collapse of the lung in cases of pleurisy with effusion, extensive pleural adhesions and dense connective tissue may form on the surface and within the substance of the lung and prevent re-expansion. Such indurative changes are more pronounced the longer the lung is allowed to remain in a contracted and atelectatic condition and constitute an important argument for early removal of inflammatory and especially purulent pleural fluid. Similar changes in the pleura and lung have been observed as a complication of artificial pneumothorax. Graetz[1] demonstrated dense fibrous thickening of the pleura over the collapsed lung. Weiss[2] observed similar changes in the pleura in two cases at autopsy. Bruns[3] found thickening of the pulmonary pleura and an increase in the peribronchial and perivascular connective tissue after experimental pneumothorax in animals. Kaufmann's[4] findings are still further confirmatory. He found the lung incapable of re-expansion in consequence of such changes. It seems to me questionable whether the risk of materially diminishing or even abolishing the function of sound parts can be safely taken.

Some observers, notably Spengler,[5] have reported the favorable effect of spontaneous pneumothorax on existing pulmonary tuberculosis in certain cases and this has been used as an argument in favor of artificial pneumothorax as a therapeutic measure. My experience has been quite the contrary, however, and I have been very much impressed with the seriousness of pneumothorax as a complication of pulmonary tuberculosis. There have been 64 cases of certain or probable pulmonary tuberculosis with pneumothorax at the Massachusetts General Hospital and in these cases the unfavorable effect of pneumothorax has been a striking feature. Rapid extension of the tuberculous process may take place from the aspiration of infected material into previously uninvolved parts of the lung. Tuberculous or pyogenic infection of the pleura occurs in a very large proportion of the cases. The fever becomes more marked and the emaciation progresses more rapidly. The danger of pleural invasion is doubtless less serious in artificial than in spontaneous pneumothorax owing to the introduction of the gas into the pleura from without in the former and its entrance through an infected lung in the latter condition, but pleural effusion appears to be by no means an uncommon complication of artificial pneumothorax. The development of pleural effusion is estimated to complicate about half the cases in which artificial pneumothorax is performed. Weiss[6] was always able to demonstrate tubercle bacilli in the effusion by animal inoculation. Such an extension of the tuberculous process cannot, it seems to me, be regarded as desirable.

Bilateral infection with tubercule bacilli is almost constantly present in pulmonary tuberculosis and I cannot understand how, if immobilization is good for one lung over-work is good for the other. In addition there is the danger of the evacuation of the contents of tuberculous cavities under compression and the infection of nearby or remote parts of the lung. Sudden death from gas embolism cannot be ignored. Forlanini had two fatalities during a repetition of the injection and three fatalities were reported to Brauer by other operators, while one occurred in his own experience. Many isolated examples of a fatal termination are recorded in the literature.

Dr. Lyon has referred to the difficulty of estimating the value of the method when the normal variations in the course of pulmonary tuberculosis are taken into consideration. The efficiency of this method of treatment has not yet been tested by means of comparative statistics and for the present must be judged according to the impressions of those who have used it. In certain instances it appears to have accomplished good results while in others the effects have been disappointing, but on the whole the results do not appear to be highly promising.

The dangers appear to be considerable and sufficient to discourage support of the method unless results so favorable as to justify the risks can be demonstrated. I hope that my criticisms will be discussed in the remarks which follow.

REFERENCES.

[1] Graetz: Beitr. z. Klinik d. Tub., 1908, 10, p. 249.
[2] Weiss: *Ibid.*, 24, 1912, p. 333.
[3] Bruns: *Ibid.*, 1909, 12, p. 1.
[4] Kaufmann: *Ibid.*, 23, 1912, p. 57.
[5] Spengler: Beitr. z. klin. Chir., 1906, xliv, 68.
[6] Weiss: Beitr. z. Klinik d. Tub., 24, 1913, p. 333.

DISCUSSION.

DR. ISAAC GERBER, Boston: I wish to say a few words about a subject which has just been mentioned casually, that is the use of the x-ray in the control of pneumothorax treatment. In the first place it is useful in selecting the type of case to be treated. We know that the indication is largely that of unilateral cases. "Unilateral" is a word used in a very loose way. Clinically unilateral cases are often found not to be such when subjected to careful x-ray examination. X-ray examination before pneumothorax treatment will frequently reveal unsuspected active foci in the opposite lung which might exclude that particular treatment. Much of the difficulty in following out artificial pneumothorax and many of the dangers spoken of by Dr. Lord might have been entirely avoided if careful control of the roentgen ray had been exercised. No matter how expert a physician may be or how well acquainted with the physical signs of spontaneous pneumothorax, they are of little service to him in following along a case of artificial pneumothorax. These signs vary so from one day to another, in fact during the course of a single day, that very few definite conclusions can be drawn from physical diagnosis alone. In following along cases done by various men I have noticed that when there are any difficulties in regard to whether or not an injection should be made, or the size of the injection, they may repeatedly insert the needle with little result, when the entire situation will be cleared up with one glance at the fluoroscope. Besides this, the development of an early hydropneumothorax can be demonstrated by fluoroscopic examination in an upright position long before there are any physicial signs demonstrable at all.

I feel that one really has no right to practice artificial pneumothorax treatment unless he has the opportunity to apply the x-ray. The advantages to be derived from pneumothorax treatment are dependent upon carrying the treatment out completely; that means getting a complete lung collapse, maintaining this collapse for a long time, and later obtaining re-expansion. All those problems ought to be carefully considered. I do not believe any one is capable of guessing at these things and I believe no one is really justfied in carrying on pneumothorax treatment unless he has constant control by means of the x-ray.

DR. EDWARD O. OTIS, Boston: I would like to emphasize what Dr. Gerber has just said and also at the same time commend the admirable pneumothorax work which has been done at the various state sanatoria without the guidance of the x-ray, and to express the hope that the authorities will see the value and the extreme necessity of providing each one of these institutions with a proper x-ray apparatus. I do not believe that we can be sure that we are applying artificial pneumothorax to the best advantage without constant checking up of our work by means of the x-ray. Only yesterday I saw a case that is in the process of being treated by artificial pneumothorax. It seemed to me that the amount of gas at that time was quite insufficient, the case having been done without the information which the x-ray would give as to the completeness of the compression.

I would like to say one word in regard to what Dr. Lord has said. I quite appreciate the theoretical objections to artificial pneumothorax which Dr. Lord has mentioned but after all we have to submit to clinical experience, and I do believe that the mass of clinical experience already offered with regard to artificial pneumothorax in proper cases has proved its value. As one of the physicians in Forlanini's wards at Pavia told me in pointing to a case of advanced tuberculosis which had practically recovered under artificial pneumothorax—"here is a case that was otherwise doomed which has been saved by artificial pneumothorax." I believe there are many cases that have been arrested by means of artificial pneumothorax which would otherwise have died. It seems to me then it has established its place in the treatment of pulmonary tuberculosis. To what extent it shall be used—whether for example it is to be recommended in certain incipient cases is still a question which is under consideration. I do believe, however, that it should be tried in two classes of cases especially, one, the advanced case which is going on rapidly to destruction, and the other, the advanced case which will never get well but more slowly advancing towards a final fatal termination. In those two classes of cases, provided we have a sufficient amount of sound lung tissue in the other lung to keep up the proper aeration, artificial pneumothorax gives us another chance, and I think every one of us would desire it for patients under these conditions.

With regard to the hyper-distention or hypertrophy of the other lung to which Dr. Lord referred—it seems to me that this is one of the things that we hope may happen in cases of unilateral tuberculosis. We consider it a favorable result when we do obtain it. In this way we can maintain the general resistance and proper aeration while we are doing what we can for the arrest of the disease in the other lung.

DR. NATHANIEL K. WOOD, Boston: I believe very strongly in what Dr. Gerber has said. I believe that x-ray treatment is essential in the safe conduct of artificial pneumothorax. With x-ray treatment many of the dangers consequent upon this treatment may be avoided. I can speak of one or two instances where we may get into trouble without knowing it. I saw 500 cc. of gas given to a patient by a very careful man. All the indications showed that we were in the right place, that the gas was being given in the pleural cavity. Four days later I gave 500 cc. more, thinking I was giving it in the pleural cavity. The x-ray demonstrated no gas in the

pleural cavity. Without the x-ray examination I do not believe it would have been possible to convince ourselves in regard to this. Under the conditions which I saw it done, I feel very sure that we cannot definitely train ourselves to know where we are giving the gas without having something like the x-ray examination to prove that we have given it correctly.

I want to refer also, to what Dr. Otis has said. It is certainly true that facts cannot be refuted. When our facts do not agree with our theories, the things to give way are our theories and not the facts. I think that we get into one difficulty in our theorization of artificial pneumothorax by using the word "collapse." The lungs do not collapse under artificial pneumothorax; they are compressed. It is very definitely a matter of compression, very severe compression. To speak about it as collapse, as something suddenly falling together, is not so—the lung is forced together. Therefore, the diseased part of the lungs is subjected to sufficient pressure, as well as the normal portions of the lungs, to accomplish the results which are to be obtained.

There are three or four results to be obtained —the first is immobilization. Although there are two sides to the question of motion,—whether or not motion is an advantage, or quiet,—personally I am very strongly of the opinion that rest is a very necessary factor in the cure of many conditions.

The second result is a marked reduction of toxic matter. We have lungs which have a toxemia from tubercle bacilli and diseased lung tissue. The body can stand a pretty large amount. I do not know how much of these two toxins the body can stand. A person can eat and sleep and do his work until a certain degree is reached, and then he must seek help in our sanatoria. By artificial pneumothorax, by compressing these lungs, you squeeze out these toxins, and very quickly reduce the amount of toxemia to a point where the body can well cope with it. At the same time a third result is accomplished, namely, the material reduction of the moisture of the lungs. You, thereby, convert the lungs from a good media upon which to grow bacteria to a very poor media, because bacteria grow in moisture and heat. You make the lungs dry, and stop the growth of the bacteria.

I think these three points are absolutely rational data on which to base your estimation of this kind of treatment: the immobilization, the reduction of the toxemia, and the elimination of the lungs as good media on which tubercle bacilli may grow.

The fourth point, the increased activity of the opposite lung, is not the serious drawback to this treatment as it appears on first thought. That I explain by the fact, that having reduced the toxemia in the blood to a point where the body can well cope with it, the digestive organs begin to do their work; then the blood, instead of constantly becoming worse, and less able to nourish the stomach and bowels, less able to fight the toxemia, can nourish the stomach, the heart, and improve the entire mechanism of the body. As the food is digested better the blood becomes richer and richer. This enriched blood is carried in a greatly increased volume to the opposite lung and because of its increased fighting qualities can stamp out whatever activity is found there. It is a common thing in this treatment to have the uncompressed lung show marked improvement.

For these reasons I feel that artificial pneumothorax is a very important step in the treatment of tuberculosis. In those cases which I have treated, I feel very sure that the results could not have been obtained in any other way. I had one case last year which had been in bed three months. After starting the treatment the patient gradually became able to move around and is still living after being given up as an entirely hopeless case. In the light of such results in the treatment, I think our theories may well give way to the facts produced.

Dr. Cleaveland Floyd, Boston: Hemorrhage has been mentioned casually as being favorably influenced by artificial pneumothorax. The experience at the Bellevue Hospital of New York, in which a series of 30 cases were treated, show some very striking results.

The objection that sometimes hemorrhage occurs from the other side has been raised. I think that is a matter of the question of dosage. Where you can control at least temporarily a bad hemorrhage that you think comes from one side, and then get moisture appearing in the other with more bleeding, you have probably given too much nitrogen. It is then best to let out some and give a small amount on the other side. That is a matter of technic very largely, I have known of some cases which have been treated in this way with very marked results.

Dr. Lord very properly brings up the question of damaging the lung from compression. I think that is one point to be very carefully considered. Most of these lungs which are treated are badly damaged. I do not believe that any case that has not had a fair trial of sanatorium treatment should be subjected to artificial pneumothorax. But if your case in spite of this begins to go downhill, this is a method to take up.

What happens to the lung is that the disease, frequently, after re-expansion has taken place, advances more or less into the uninvolved portion. The other lung is protected; you do not see the cross-infection which is the common story where you do not handle these cases with compression. One lung is protected at the expense of a partial destruction or a fibrosis of the other lung, and the case goes along and does very well. We must remember that in most of these lungs the lesion is not definitely limited, a fibroid process above and good lung below. They are partly involved above, partly below. It is a compression of partly good lung below and partly involved lung above. It is not alto-

gether a compression of good lung substance but air cells which are capable of doing their work and a good many which are not. In some cases one small injection which would not be possible to compress a great extent of lung will immediately stop the temperature, cough, and expectoration.

If the operator is fortunate in securing compression over the active portion of the lesion this suppression of active symptoms immediately takes place.

VI.

THE X-RAY AS AN AID TO THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

BY P. CHALLIS BARTLETT, M.D., BOSTON.

THE diagnosis of pulmonary tuberculosis is not always difficult. It is unfortunately true that many patients do not seek advice until the tuberculous process is so far advanced that the diagnosis is only too evident.

There are other patients who for one reason or another seek advice when in the early stages of the disease.

The diagnosis here is not an easy one to make, but it is of the utmost importance to use every means at our disposal to make a diagnosis, before the process has extended to the point where tubercle bacilli are present in the sputum. In such instances also we must use all of the methods we have in order to make sure that we are dealing with an active case of tuberculosis, and not one due to infection by some other organism.

Instruments of precision and the so-called exact methods of diagnosis, have increased rapidly in the past few years and in doubtful cases we should use all these methods.

The use of the x-ray as a means of diagnosis has developed along with other methods and at present is widely used as an aid in the diagnosis of all kinds of pulmonary conditions. It is especially in the diagnosis of pulmonary tuberculosis, however, that this method has met with much favor, as an adjunct to the other methods of diagnosis and the x-ray enthusiast has made many, and at times what seem to be extravagant, claims for the x-ray as a means of diagnosis.

In the hands of an expert the x-ray adds to our list of diagnostic methods, but without the interpretation of an expert is apt to be misleading and unreliable.

The x-ray plate properly interpreted, backed by a complete history and clinical examination, frequently proves to be of real service in helping to reveal an early tuberculous process.

The plate alone, even when carefully studied, will sometimes present a picture not inconsistent with a tuberculous infection, and yet the case may never present any evidence of tuberculosis except what was found on the first plate.

We must remember that the x-ray can only see; it does not interpret what it sees.

On the examination of a large number of plates with the interpretations made by experts, and comparing these results with the clinical findings, the greatest differences seem to be in deciding between active and non-active lesions.

Only by combining the work of the roentgenologist and the internist can the best results be obtained.

There are two types of cases in which the x-ray is especially helpful in making a diagnosis—pulmonary emphysema and the tuberculosis of children. In cases of pulmonary emphysema, tuberculosis is not an infrequent complication, but here the diagnosis of tuberculosis is often difficult.

On the clinical examination of such patients we find a hyperresonance on percussion, and on auscultation, many loud squeaks and moist râles. These signs often obscure any others that may exist as the result of a tuberculous infiltration. In such instances the x-ray plate will often make clear the true condition by demonstrating the consolidated area.

In tuberculosis in children the x-ray is helpful and should be used in every doubtful case. In children the glands at the root of the lungs are most frequently the seat of the early lesions. The physical signs are apt to be indefinite. X-ray examinations, however, will reveal such enlarged glands. If in addition to such enlarged glands as shown by the x-ray, there are suggestive clinical signs and symptoms, we can safely make a diagnosis of tuberculosis. To briefly summarize, we can say:—

1. Many cases of tuberculosis come to a physician when the diagnosis of this disease is not difficult to make.
2. In making a diagnosis of tuberculosis in an early case, we need all of the help possible from every source.
3. The x-ray when used by an expert is a help in the diagnosis of early tuberculosis.
4. The x-ray examinations should be a part of the complete examination of the patient, but should not replace the ordinary well-known clinical methods of making a diagnosis.
5. There are several types of cases in which the x-ray may be especially helpful. Chief among such conditions are phthisis in cases of emphysema and bronchial gland tuberculosis in children.

VII.

THE X-RAY AS AN AID TO THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

BY H. W. VAN ALLEN, M.D., SPRINGFIELD, MASS.

THE early diagnosis of tuberculosis of the lungs is of immense interest to the medical profession, and of inestimable value to humanity at large. Any method of diagnosis that tends to bring the doubtful cases into the class of those actually diagnosed, either positively or nega-

tively, should receive the most careful attention.

The detection of tuberculosis in its earliest incipiency is the greatest factor not only in saving the individual but also in the safety of the public.

What is incipient tuberculosis? Merely a relative term. Many cases that pass the ordinary physician will be proved tubercular by the trained specialist. So in this short paper, which on account of the time allowance can do nothing more than state facts, leaving the proofs for more extensive writings, I hope to show you some of the advantages of the roentgen method in early diagnosis. The roentgen ray has made more new history for itself in the last few years than any other medical subject. In none of the various organs of the body have these recent improvements in roentgen technic a better field than the lungs, and in none has it been more neglected. I can think of a dozen leading roentgenologists who have done advanced original work on the diagnosis of alimentary conditions while I can only recall one who has done the same in lung diseases. There are several reasons for this apparent neglect: The family physician has a tendency to feel his way along by periodic examinations with the stethoscope, thereby losing the only valuable time for the patient. The specialist is quite satisfied with his own method and hesitates to change to another radically different. The roentgenologist does not push this method because it is, on account of the large plates involved, expensive, and no class of patients are less able to pay. The making of a positive diagnosis usually involves the making of two enemies: first, of the patient, as no one in its incipiency wishes to be told he has tuberculosis; and secondly, the medical man so often doubts our little shadows, especially when not confirmed by the stethoscope. In this stage recovery is so frequent that to follow the case up is of no value, and it never can be proved that the roentgenologist established an earlier diagnosis than was possible with the stethoscope.

Two facts stand out in an argument in favor of roentgen study of chest diseases. First, the roentgen ray passes through objects in exact inverse proportion to their density. In theory no deviation of density is too small to fail to record itself. In practice, in objects of medium degree of x-ray penetration the slightest amount of change can be detected. Secondly, no tubercular process occurs in the lung which does not change the density of the tissue. Place these facts against each other.

In the roentgen ray we have a method that shows the slightest change in density of semi-transparent objects. The chest is ideal for such examinations. In tuberculosis the density changes in the earliest stages. In theory all cases should be detectable. In practice few should be overlooked if proper skill and care are employed. It should be remembered that increased density can be detected about as easily at the root of the lung as at the apex, and I have found that a very large proportion of lesions that are diagnosed by the stethoscope can be shown by roentgen ray to be accompanied or preceded by disease at the base. Cole, who has made a large number of examinations, says, "I have never seen a tuberculous lesion of the parenchyma without a typical tuberculous infiltration around the root. With improved technic and more pathological radiography I think that it will be established that all tuberculous lesions begin at the root and extend to the parenchyma."

As to technic, two methods present themselves; they should not be rivals, but co-workers. Both the plate method and that with the fluoroscope are valuable, each having certain advantages not possessed by the other. No lung examination is complete without the use of both. Time will not allow me to enumerate the advantages beyond saying that the plate shows details of the lung structure which are entirely lost to the fluoroscope, while the fluoroscope gives us the motion of the inspected organs which is of the greatest value; also, the inflation and deflation show certain diseased portions that cannot be seen as well by the plate method. The character of penetration of the ray may also be changed at will to show various lesions in a fluoroscopic examination. On the other hand, these fluoroscopic shadows are always flat. In making plates great advantage can be gained by the stereoscopic method, which gives us a sense of the third dimension. In this way the chest becomes a veritable transparent box. The organs and structures being seen in their true relation, overlying structures do not preclude a study of those beneath. So let me again say, let there be no quarrel between the two methods of roentgen examination, and use both. And here might be a good place to emphasize another coöperative element that is not always carried out. The tendency is to pit the roentgen method of examination against the older methods. This is wrong; we are not here to do medical or diagnostic feats, but to cure disease, and the roentgenologists should have the full benefit of the history and physical examination, and the internist should have the plate demonstrated and the fluoroscopic examination explained by the roentgenologist. There should be a consultation, not a report from the roentgenologist to the internist. The roentgenological study of a chest is quite different from a pathological laboratory report, the latter being a definite report, while the former is open to many interpretations, the key to the correct one being in many cases the information possessed by the internist. Again I say, coöperation.

Let me say a word as to advanced technic, and only a word. Only a few years ago the writers on roentgenology of the chest were delighted because radiographs could be taken while even a patient with dyspnea could hold his breath. Now even without intensifying

screens we only expose a very small fraction of a second. Good plates have been made in a single electrical impulse from the ordinary alternating current, or 1-120 of a second. Think what this means,—to have absolute rest during the exposure, not even the jar of the heart being a factor.

The principal arguments against roentgen methods in chest diseases are: we see too much; we cannot distinguish recent tubercular from other processes. Neither of these arguments is true if care is observed. Experience teaches us to eliminate the unimportant. When one considers that the Germans say that 98% of all adults have had tuberculosis of the lungs and that 93% of children react to the cutaneous tuberculosis test,—if this is true we are not asked who has tuberculosis, but what is the extent, what the kind and location and whether nature will perfect a cure unaided or must assistance be given.

Can we distinguish recent tuberculosis from old healed lesions, from thickened pleura, from carcinoma, from pleurisy and empyema and other diseases which change the density of the lungs? If time permitted, I should like to go into details. With careful technic including stereoscopic plates and close attention by one skilled in roentgenology, accompanied by the cooperation of the internist, the percentage of error in diagnosis is very small, and as our experience grows will be still further reduced.

VIII.

X-RAY AS AN AID IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

BY P. H. COOK, M.D., WORCESTER, MASS.

THE x-ray may assist the internist in his management of the tubercular patient either by proving the presence or absence of the disease in a doubtful case, or, in one where diagnosis is already clear, by disclosing the extent and character of the involved areas. In these days of the successful crusade against the disease, when early detection is the watchward and one of the principal factors in ultimate cure, it is this phase which is naturally of greatest interest; yet the roentgen examination of advanced patients is frequently of great importance in prognosis.

At the hilus of the normal lung there appears on the x-ray plate a branching shadow, representing the bronchi, vessels, and glands in that region. The earliest sign of tuberculosis, especially in children, is frequently seen as an enlargement and diffusion of this normal shadow, representing involvement of the peribronchial glands. This sign can be found in many cases where the most searching clinical examination proves negative. Chronic bronchitis also produces changes in this shadow, but not like those of tuberculosis. At the apices, the other most frequent point of invasion, diagnosis rests on a difference in density, which may be slight, but on a good plate is unmistakable. Whether clinician or roentgenologist first discovers the affection at this point is largely a matter of the personal equation. Other foci show as dense areas mottling the surface of the normal lung shadow. Cavities appear as dark areas in the midst of the light portions representing consolidated lung; a cavity filled with pus may, however, be missed because the pus is of the same density as the affected lung and casts no contrasting shadow. Involved mediastinal glands show in oblique view, and are often of diagnostic importance in early cases.

As this audience is one of internists rather than roentgenologists, and as such more interested in clinical results than in the interpretation of plates, it has seemed best to devote most of my time to the report of a few cases, selected from a series studied at the Worcester City Hospital mostly from the out-patient clinic of the chairman of the section. As our department is not well equipped for fluoroscopic work, that part of the roentgen examination will intentionally be ignored. It is not intended to belittle the value of this method in many cases.

CASE 1. Man of 25. Cough and pain in chest for three months past. Slight hemoptysis three weeks ago. Anorexia and weakness. No fever or night sweats. Some pain in chest. Best weight 145, now 142. T. 98.8. P. 100. Physical examination shows râles and amphoric breathing at right apex.

X-Ray Examination. Consolidation of right lung to third rib anteriorly, and of left apex. Diagnosis of tuberculosis confirmed by positive sputum one week later.

This case would undoubtedly have been diagnosed by ordinary methods. The ray, however, assisted by showing the involvement to be more extensive than was suspected.

CASE 2. Negro man of 58. F. H. negative. Says he was never sick before. For past six months has had pain running from sternum through to back. Slight cough with expectoration. Some loss of weight. Dyspnea marked especially when going uphill. No fever, chills or night sweats. Voice very husky. Physical examination shows aortic second sound accentuated at apex and especially over aortic area. No increased area of dulness to percussion. No bruit or tracheal tug. Right lung shows harsh breathing over whole upper lobe. No dulness or râles. Examination of larynx negative but unsatisfactory from spasm. T. 98.4, P. 90.

X-Ray Examination shows marked enlargement of great vessels, with bulge to left. Diagnosis: Aneurism of aortic arch.

This case, while not tuberculosis, is included to show the value of the ray in clearing up an obscure diagnosis. A Wassermann test on this patient, done next day, proved positive.

CASE 3. Girl of 12. Mother and one brother have tuberculosis. Under observation for several months early in 1913 following right-sided otitis media, being referred by medical side as chest case. At that time had severe cough, poor appetite and pain in left lung. Examination showed prolonged blowing expiration at right apex front and back. No temperature. P. 90. Sputum, negative.

Returned Nov., 1913, with similar symptoms following follicular tonsillitis.

X-Ray Examination entirely negative. Diagnosis: Bronchitis.

CASE 4. Woman 26. F. H. negative. Pneumonia two months ago, felt poorly since and has had cough with expectoration. Streaked sputum occasionally. Appetite poor. Bowels constipated. Weak and anemic. Slight fever and occasional night sweats. Pain through abdomen. Slight dyspnea. Cta. regular. P. 84, T. 99. Physical examination shows bronchial breathing at right apex in front, few fine crackles at both bases posteriorly.

X-Ray Examination shows marked enlargement of hilus shadow. Diagnosis: Tuberculosis.

CASE 5. Man of 35. Family and personal history negative except that one brother now has miliary tuberculosis.

Seven months ago had sharp pain in right chest, increased by respiration and diagnosed as pleurisy. This lasted four days, and soon after he began to have profuse expectoration of foul smelling greenish material, which has continued to the present. Persistent cough and loss of weight. Appetite good. Referred for x-ray examination by family physician with note simply "Physical signs contradictory." Repeated sputum examinations negative.

X-ray shows in upper part of right lung an oval area size of English walnut which is very dense; several smaller foci scattered over upper part of right lung; left apex shows slightly increased density.

Diagnosis: Pulmonary abscess; probable tuberculosis.

On the strength of these findings and the patient's apparently good general condition, drainage of the abscess was proposed by a surgical consultant; this advice was, however, not accepted by the patient for six weeks. At the end of this time he entered the hospital, and examination by Dr. Getchell disclosed a surprising change. The right lung presented slight dulness from the apex downward to the sixth rib behind and fifth in front, with coarse and fine moist râles over the entire area. At level of fourth interspace posteriorly an area of amphoric breathing two inches in diameter. Voice and breath sounds increased over entire area. In left lung slight dulness at apex posteriorly, with increase of voice and breath sounds. Another set of plates, taken immediately, showed marked involvement of the left apex, while the upper two-thirds of the right lung was nearly filled with dense foci, among which the abscess cavity, enlarged to nearly twice its former size, could be discerned. Operation was of course abandoned.

In this case the x-ray after first settling the diagnosis, became later the means of confirming the bad prognosis already worked out by the clinician.

Speaking generally, the findings of roengenologist and clinician agree pretty closely; where there is a difference, it is usually the ray which shows the greater area involved. Central foci too small to give signs to the stethoscope will cast their shadows on the plate.

A word as to interpretation. The lack of perspective of the ordinary x-ray plate gives a first impression of disease more extensive than really exists, the shadows of all foci at whatever depth being thrown into one plane and giving the appearance of continuous density. Stereoscopic plates give a correct view but are expensive for large hospital clinics. All lung plates must be taken with careful attention to pose. For example, a slight difference in level of the two shoulders as the patient lies on the plate may produce a false appearance of density on the higher side.

In conclusion; success in this line of work depends, as in other branches of medicine, upon the hearty coöperation of roentgenologist and clinician. The findings of each should be carefully checked up by the other. The modern interrupterless equipments place the making of perfect instantaneous plates within the power of any intelligent man; but the most skilful of us are at times unable to interpret with certainty the shadows which we find thereon. Old foci, for example, are supposed to show sharply-defined shadows, while active lesions give a woolly appearance; in practice it is frequently hard to distinguish these. No reasonable man can doubt the accuracy of the method; the results attained by the individual worker will be directly proportional to his efforts to improve his interpretation and technic.

DISCUSSION.

DR. FRANCIS H. WILLIAMS, of Boston: *Mr. President:* It was not my intention to speak, but I thank you for your kind invitation to do so.

I am glad that so many physicians are now ready to admit that a complete examination of the chest includes an x-ray examination.

Let me make two suggestions, one is that a good way to overcome the antagonism which has been referred to between the roentgenologist and the internist is to combine the two in one man, that is so far as chest examinations are concerned. In the future, I believe the men interested in chest diseases will learn to make x-ray examinations themselves as a part of the usual physicial examination. I was much interested last summer and during a previous summer to see that some clinicians in France and Germany made their own x-ray examinations, and it is done here to some extent also.

The second suggestion relates to early diagnosis. For many years I have been examining physician in this region for Dr. Trudeau's Adirondack Sanitarium. One March a man brought his son to me to be examined for admission there. A daughter had died of pulmonary tuberculosis

the previous October. On inquiry I found that the man had seven children and suggested that he bring them and the other members of his family to see me for x-ray examination. He objected on account of the expense, and although I explained that it would cost him nothing, he did not bring them.

Judging from the experience of Dr. S. W. Ellsworth and my own, the probability is that properly-made x-ray examinations would have revealed early pulmonary tuberculosis in at least one of the group, in a stage that is easily overlooked by the usual physical examination. Such examinations I have called precautionary x-ray examinations. I believe they have a future and when their time arrives pulmonary tuberculosis will be less often overlooked, especially in those persons who are in an early stage of this disease.

DR. ISAAC GERBER, Boston: I want to repeat what some of the readers have said about the necessity of co-operation between the internist and the x-ray men. I believe, however, that this work should be independent work. The danger of work done by one man is that the person who does his own x-ray work, however skillful and conscientious he may be, is apt to be either an insufficient clinician or an insufficient roentgenologist. The combination of expertness in both is extremeley rare—even in the European clinics. The clinician who does his own x-ray work on the chest almost always reads into the roentgen examination what he believes to correspond with his physical findings. I have very rarely found that to be otherwise. That is to say the men practically make their diagnosis from history, constitutional and physical signs, and the later examination with the x-ray will usually agree. This, I believe, is not a safe state of affairs. The ideal course is to have a competent internal examination by a skillful internist and a competent x-ray examination by skillful roentgenologist and then an unbiased report of each with a consultation. From the consultation much can result. That ought not to be left out. But I believe the fundamental work should be done by two specialists in each line rather than by a combination in one person.

DR. EDWARD O. OTIS, Boston: I would like to emphasize what has first been said. I do not believe there are any large number of internists who would ever become skilled roentgenologists so as to do accurate and authoritative x-ray work; they do not have the time for it. One forenoon in Sahli's clinic in Berne I saw Sahli working with his expert roentgenologist—one was giving his side of the case and the other his. I saw the same thing with Bauer in Hamburg. I believe in the large majority of cases if we are going to take advantage of x-ray work in the diagnosis of tuberculosis we shall have to do it in connection with skilled x-ray men. Roentgenology has become so much of a specialty now, I do not think any general practitioner or any internist can succeed in obtaining so accurate information from his own x-ray work, although he must be able to intelligently interpret the radiograph the expert has taken; and together with him, work out the true disclosures of the x-ray picture.

IX.

DIAGNOSIS AND TREATMENT OF TUBERCULOSIS IN CHILDHOOD.

BY W. C. BAILEY, M.D., BOSTON.

THE question of childhood infection has assumed such importance in the tuberculosis question that it is absolutely necessary for every one connected with this work, and especially physicians, to appreciate the magnitude of the problem and to help to formulate some adequate fundamental scheme for its solution.

This theory that childhood infection is responsible for the majority of cases of pulmonary tuberculosis occurring in adults presupposes the acceptance of the theory of latent tuberculosis infection, and both these views were advanced by such men as Weigert, Harbitz and Petruschky at least ten years ago. Owing to indifference, ignorance, and the natural reluctance of the human mind to accept radical views, these theories have seemingly lain dormant, but in reality have steadily gained headway in spite of opposition until they stand today in a practically impregnable position.

In brief form, the postulate is made that of all the new cases of pulmonary tuberculosis occurring in adults or youths in a given year the great majority of them represent infections in childhood from some open case in the household or from milk, and that for every developed case there are three others who become infected, but in whom the infection was overcome by the resistant powers of the body. Furthermore, that children as a rule control this infection, either by reason of their glandular activity or on account of their moderately healthy lives, but that this resistance disappears under the strain of young adult life.

Theobald Smith has brought out pointedly the facts about the parasitism of the tubercle bacillus; how the bacillus and the body have in fact declared a truce, and further how the bacillus inspired into the lung of a child passes through the young, untrained tissue, is taken up by the lymph duct and passes to the gland in the mediastinal space, draining that area. Other observers state that tubercle bacilli ingested in milk pass into the lymph circulation and are deposited into the glands and then into the lungs. Evidence of this widespread infection is furnished by the von Pirquet test, negative results being obtained for the most part in infants under three months with a gradual increase of positive results as age increases and chances for infection multiply. Hess of New

York reports infection of a number of children in a hospital ward in a few weeks from a nurse with an active lung process. MacCorison and Burns brought out the fact of home infection in their study of "family clusters." More recently in the *Bulletin of the University of Minnesota* appears a report made by Herbert G. Lampson on "A Study on the Spread of Tuberculosis in Families." The problem in this study was stated as follows: Given a known center case of active pulmonary tuberculosis in a family, what proportion of the individuals in that family show evidence of infection with tubercle bacillus.

In 33 families in this class a physical examination was made of each member of the family, and in addition the von Pirquet test or the subcutaneous test was applied. Four families classed as containing latent center cases were studied and three families classed as containing healed center cases, and ten families classed as containing non-tuberculous center cases. As a control, five families containing no reported or suspected cases were examined. The conclusions drawn by the author are as follows:—

First, that the spread of tuberculous infection in families where open cases of tuberculosis exist is greater than it is generally understood to be. Sixty-seven per cent. of the individuals of these families, excluding the center cases, show evidence of tuberculous infection. In no case where there has been definite proven exposure of a family to an open case of tuberculosis, no matter what precautions have been taken, did the infection fail to spread. In at least ten cases investigated, the infection has spread to the limit of available material. Every member of these ten families shows evidence of tuberculous infection.

Second, that in families where no cases of tuberculosis have been found, no matter what the home life or living conditions were, the number of individuals showing evidence of tuberculous infection was small, namely 2½%.

Third, that in families where cases of latent tuberculosis exist, the spread of infection is not as great as in families where open cases of tuberculosis are found, 22% against 67%.

Fourth, that in families where healed cases of tuberculosis are present, the spread of infection is less than in families where open cases exist, 33% against 67%.

Fifth, that in families where no tuberculosis is found, the number of individuals showing evidence of infection is small (2½%) in comparison with the families in which open, latent, or healed tuberculosis exists.

No study of the milk supply was made as a part of this investigation. In view of the evidence from so many sources that it is very exceptional for a child to escape infection when exposed for any length of time, and in view of the fact that we have a new group of cases each year, numbering in this state alone from 5000 to 10,000, arising from these infections in childhood, we are forced to the conclusion that we can make no headway in the general problem until we control the child problem.

We come now to the question of diagnosis, and I cannot state too emphatically that we should distinguish very clearly between a diagnosis of infection and one of disease, and this must be done on broad lines, regarding tuberculosis as an endemic disease, an enemy of the race, rather than an isolated disease of the individual. My procedure would be as follows:—

To inquire very carefully as to the presence of an infecting case in the family, and if one is found, make a provisional diagnosis of infection. Then try the von Pirquet test and if that is positive make a physical examination for signs of intrathoracic or intra-abdominal tuberculosis for the purpose of finding out whether the case is one of infection only, or disease. If the well known signs of mediastinal gland infection are elicited and confusing factors eliminated without active disease in lung or abdomen, the facts should be carefully explained to the family, the case reported to proper authorities and the child given special hygienic care at an out-door school. If active disease is found, treat in sanatorium or special out-door school. In the event of a negative von Pirquet with a history of contact, keep the child on the "suspicious" list, place him in an out-door school if possible, and repeat von Pirquet test at appropriate intervals. If there is a negative history of contact and negative examination but a positive von Pirquet, the procedure should be the same as in the case cited above, always making a careful physical examination for the purpose of detecting the active case. I believe that the adoption of a scheme as here outlined in brief will show great results in fifteen years. A change in the board of health regulations is necessary so that a physician may report cases of tuberculous infection as distinguished from tuberculous disease needing sanatorium care, whether an open case or not. In the case where contact is proved but von Pirquet test is negative, the physical examination should be made in the same way and the von Pirquet test repeated several times. In any event the name of the child should be given to the health and school authorities as a suspicious case needing oversight.

X.

Roentgen Ray in Tuberculosis of Children.

By W. J. Dodd, M.D., Boston,

Roentgenologist of Massachusetts General Hospital.

The question is often asked, "Can a diagnosis of tuberculosis be made earlier by means of the Roentgen ray than by other methods?"

The answer we have always made is, that if a pathological lesion be present, the Roentgen

plate will always reveal it. But it must be clearly understood that because the roentgen picture reveals a lesion, it is not necessarily tuberculosis. We must realize that the Roentgen picture is a projection picture and "a record of density." Any lesion that will cause increased density of the glands or surrounding tissue will present a departure from the normal.

This being the case, we are compelled to consider all possible causes that will give rise to this departure from the normal.

We must consider the infectious diseases,—bronchitis, bronchiectasis, and also syphilis. Do any of these conditions present a picture which will enable the Roentgenologist to make a different diagnosis? Bronchitis and bronchiectasis oftentimes do; other conditions we believe do not, except miliary tuberculosis, which presents quite a characteristic picture.

St. Engel says, "Bronchial gland tuberculosis is undoubtedly a very important subject as it is often an isolated process and the only manifestation of the tuberculous lesion. In his valuable contribution reviewed by Michael, he gives a fine description of the anatomy and topography of the bronchial glands in children.

In the excellent review by Michael, many eminent authorities are quoted.

It is difficult to locate certain groups of glands that are obscured by the heart, large vessel and thymus. Special technique, oblique and lateral views, however, will oftentimes give considerable information.

Recently in the Roentgenological department of the Massachusetts General Hospital, a series of one hundred cases have been examined. These cases were referred from the children's department. A most careful examination has been made by Dr. R. M. Smith and every effort made to determine the presence of tuberculosis.

From the Roentgenological point of view, this is a most interesting and important series, as in all cases where there was clinical evidence of a lesion this has been confirmed by the Roentgen picture.

In several instances lesions were found that were not made evident by the clinical examination; eleven cases in all.

In only nine cases out of this series of one hundred was there any evidence of active tuberculosis, yet eighty-nine showed some pathological lesion in the Roentgen picture. The Roentgen report in the great majority of these cases was enlarged hilus and peribronchial glands.

(These cases will be published in detail by Dr. Smith.)

Certainly this series shows that other conditions beside tuberculosis will reveal evidence of enlarged hilus and bronchial glands, and emphasizes the great importance of a complete examination before a diagnosis of tuberculosis is made.

A diagnosis of tuberculosis should not be made until positive clinical evidence is obtained. As regards the Roentgen picture, is it fair to assume that tuberculosis (except miliary tuberculosis) will present a sufficiently different picture than other infections in children? The position of the glands involved are the same and we are not convinced that a differential diagnosis can be made, unless the glands be calcified.

This article is not meant to belittle the use of the Roentgen examination. This method is of the utmost importance and should be used far more frequently than it is. Definite information as to the presence of a lesion can always be obtained if present.

Repeated Roentgen examination at intervals of a month or less are advisable. By this means we frequently show that the lesion has cleared up. We should not expect such change if the lesion be tuberculous. We believe that the physician should be very careful before making a positive diagnosis of tuberculosis, owing to the fear and apprehension that such statements may give rise to.

XI.

TUBERCULOSIS IN CHILDREN.

BY RICHARD M. SMITH, M.D., BOSTON.

TUBERCULOSIS in children involves many questions relating to the general tuberculosis situation, but in the limits of a paper as brief as this, it will be necessary to disregard all phases of the subject, except those bearing directly on the problems peculiar to childhood. Tuberculous infection in children occurs with such great frequency that it demands the especial consideration of persons interested in tuberculosis and of those primarily concerned with child welfare. It is estimated that 9% of all children under one year of age, and that from 60 to 80% of all those under fifteen years of age are infected. The theory has been advanced that all tuberculosis among human beings is acquired in infancy and early childhood, and that tuberculosis in adult life is simply the lighting up of an old infection. This probably is an over-statement of fact, but the theory suggests the importance of studying this phase of the subject.

The mode of infection with tuberculosis at whatever age is a matter which has been discussed for many years. Whether insufflation or ingestion is the primary means of infection is of more theoretical than practical interest, so far as prevention or treatment of the disease is concerned. The source from which infection is acquired, however, is a matter of very vital consequence. Barring the rare cases of prenatal infection, tuberculosis in infancy arises as a result of direct exposure to tubercle bacilli. Various estimates have been made of the percentage of infection which is due to the bovine tubercle bacilli. Von Behring goes so far as to say that tuberculosis in infants is usually introduced in cow's milk and absorbed through the intes-

tines. Certainly 25% of the infections of children under five years of age are from this type of organism, *i.e.* one case of tuberculosis out of every four occurring in infancy or early childhood is acquired from tuberculosis in cows. The percentage of infection by this channel is great enough to make it extremely important that we should insist upon clean milk for infants. The necessity of securing milk which is free from tubercle bacilli has failed to arouse the interest among physicians which the frequency of tuberculous infection from this source demands. The least we can do is to insist that milk shall be from a tuberculin tested herd, or that it shall be pasteurized. There can be no middle ground in this matter.

Of much greater importance than the infection of infants from contaminated milk, is the infection which comes from exposure to persons ill with tuberculosis. Fishberg has found in New York City that out of 692 children who had been in contact with tuberculous individuals, 465, or 67.25%, gave evidence of having been infected. This emphasizes at once the importance of removing patients who have active tuberculosis from the home, where they are a source of danger to children. A considerable portion of the money spent for prevention of tuberculosis is most legitimately expended, it seems to me, in removing the active sources of infection from the community. By this means we may secure a constantly diminishing number of infected individuals. This is much more than caring for the incurables; it is the surest method of preventing the extension of infection.

Tuberculous infection in children is practically always glandular in type, and this glandular infection is primary, not secondary to the draining of a tuberculous focus elsewhere in the body. The glands may be situated either in the cervical, thoracic, or abdominal regions. The infection of the cervical glands is a condition quite distinct from the general problem. The infection in these glands usually comes through the tonsils, and has a remarkable tendency to remain localized in that portion of the body. Bone tuberculosis is another type of tuberculous infection common in children which is so definite in its manifestations and so rarely extends to other parts of the body that it need not be discussed further.

It is important at this point to make clear the distinction between tuberculous infection and tuberculous disease. Tuberculous infection occurs in many instances without symptoms sufficient to attract any attention, and then goes on unrecognized. It may give no signs on physical examination, but usually thoracic and abdominal gland tuberculosis is made evident by the local signs of enlarged glands. There may be chronic enlargement of the bronchial or mesenteric glands from infection with some other organism than the tubercle bacillus. It is necessary to have a positive von Pirquet reaction to make the diagnosis of tuberculosis. The von Pirquet reaction may be taken as a safe index to tuberculous infection. The instances in which a negative reaction occurs in the presence of a tuberculous infection are usually instances which can be explained according to well known facts.

Unless the tuberculous infection is active, it is not a source of immediate danger, either to the individual or to the community. A child with such an infection should be treated, not as a patient with active tuberculosis, but as an individual to be watched carefully, fed properly and put under good hygienic surroundings in order that the disease may not become active.

Tuberculous disease means an active tuberculosis. This condition in children starts as a glandular disease, but has a great tendency to extend beyond the confines of its original seat within the gland, and when such an extension occurs apparently there is little further tendency to localization. It becomes at once a generalized process, leading often to rapid death. After the age of ten years, tuberculosis assumes the characteristics of adult tuberculosis, but before that age the diagnosis must be made on different evidence. The symptoms are usually very indefinite. There is little or no cough and almost never any sputum. The temperature is frequently not greatly elevated, and not more elevated than occurs in infants and young children from a variety of causes. Night sweats do not usually occur, and if present may be due to many causes not tuberculous. The history is one of general malaise, slight fever, loss of weight, pallor or similar indefinite complaints. These symptoms are most often attributed to some disease of the gastro-intestinal tract. Physical examination in the early stage of the disease reveals nothing other than a child in poor condition with enlarged glands. The diagnosis of enlarged bronchial glands has been the subject of much discussion for many years, but there is no unanimity as to the physical signs of this condition. In general, it may be said that the two most dependable signs are the downward extension along the spine of the point where whispered bronchophony can be heard, *i.e.* D'Espine's sign, and the x-ray. Unless D'Espine's sign is positive down to the second thoracic vertebra, it is not a reliable sign of enlarged bronchial glands. The x-ray findings are of distinct value, and with rare exceptions coincide with the other sign. In favorable cases there is dullness at one side or the other, most often the right, of the vertebral column at the level of the lung roots about the fourth thoracic vertebra. In many instances also there is an enlargement of the superficial veins of the upper portion of the chest.

Enlargement of the abdominal glands may give no signs, but in some instances the glands may be felt on deep palpation.

When the disease extends beyond the glands into other parts of the body the physical signs become more definite. In the lungs they may be those of broncho-pneumonia and frequently

that diagnosis is made with no suspicion of tuberculosis. The diagnosis of meningitis and peritonitis need not be discussed here.

The general impression prevails that tuberculous disease in infants is always fatal. Schlossman says he knows of no infant who has been cured. Von Pirquet puts the mortality of children under one year of age as 90%. He says further that there is very little tendency to cure under four years of age. My own experience leads me to be somewhat more optimistic than these statements, but the fact remains that the great majority of infants with the disease die. As the age increases the prognosis becomes more favorable. This emphasizes the need of protecting infants from the sources of infection and the desirability of making the diagnosis in the early stage of the disease, when it is confined to the glands. When there is evidence of the extension of the process beyond the glands the prognosis is very grave.

The treatment of tuberculous disease in infancy and childhood is not radically different from the treatment of tuberculosis in adults. These patients require plenty of fresh air, rest and careful attention to the details of feeding. The greatest single factor in infantile tuberculosis work is the prevention of infection, which means clean milk and the adequate treatment of persons with open tuberculosis.

DISCUSSION.

DR. CONNOR: It is very interesting to hear the views of these different men. I believe most decidedly that we have got to discriminate carefully in speaking to the parents in regard to children being tuberculous, suspected of having tuberculosis. It is detrimental both to the children and to the welfare of the family. Oftentimes it has been done, bringing about a feeling of unhappiness and discontent. There is no question as to the fatal results with infants. I think Dr. Smith has been particularly fortunate in doing so well. I think he should be congratulated. I believe most decidedly that at such an age as that they are practically dead from the outset. The question of tuberculous glands in children 14 to 15 years of age is an entirely different matter. We do see them and they get well and rarely ever have any subsequent trouble so far as the lymphadenoma is concerned. The statement has been made and should be emphasized that treatment should begin at the time the child is born, and that the conditions of the home and the conditions of the people with whom the child comes in contact should be looked into. I do not believe that there is any doubt that by far the most of our tuberculosis begins in childhood. The figures of the different men that have looked it up vary a great deal according to the location in which they worked. Sahli finds only 5%. His work is done among the well-to-do. Hamburger finds 95% because he works among the very poorest class. Von Ruck reports 85% of children which were not considered tuberculous at all. Certain it is that at least two-thirds of the cases of tuberculosis arise before a child is 15 years of age.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

ANNUAL MEETING, HELD IN THE ASTOR HOTEL, NEW YORK CITY, APRIL 9, 10 AND 11, 1914.

The President, DR. WILLIAM J. MAYO, in the chair.

(*Concluded from page 426.*)

ARTHROPLASTY FOR INTRA-ARTICULAR BONY AND FIBROUS ANKYLOSIS OF TEMPOROMANDIBULAR ARTICULATIONS REPORT OF NINE CASES.

DR. JOHN B. MURPHY, Chicago: Ankylosis of the jaw may be divided into, (1) the intra-articular fibrous and osseous, and (2) the extra-articular cicatricial varieties. The most common type is the bony, and in this there is complete fixation of the jaw. When the ankylosis is fibrous there is some degree of motion of the jaw. The symptomatology is a flattening and deformity of the unaffected side, while the opposite side is full and round, a retraction of the chin with deviation toward the ankylosed side, and a slight sliding motion of the unaffected side on forced opening of the mouth. The muscles on the ankylosed side are more atrophied than those on the opposite side. The technic of the operation consists in the division of the mandible at its condyles, the removal of a third of an inch of the entire diameter, the interposition of the temporal fascia and fat flap, and closure of the wound. Then the separation of the teeth on the operated side by a block for two weeks and the institution of passive motion after the third week.

DISCUSSION.

PROF. LEXER, Jena: I believe that in ankylosis of the jaw the prognosis for arthroplasty is good. I have performed the operation similar to Murphy's, but undertook the interposition of free fat flaps. In the other joints I transplanted fat, fascia and joint cartilage. The most difficult is the knee joint, because it must be able to support the weight of the body without other assistance. For this reason I prefer here the free homoplastic joint transplant. Also other transplants lead to the same end, namely, fat in weight-bearing joints. The most important thing for the joint is good after-treatment of the case with well preserved musculature, retained fascia lata, sound patella, and the cure of the underlying cause.

PROF. JURASZ, Leipsic: In ankylosis of the knee-joint in the clinic in Leipsic we have of 23 cases of immobilization, 16 good results and 7 failures, the latter all belonging to the earlier period. We have tried fascia alone, free fascia with fat, and pedicle fascia with fat; the last material we consider the best and use it always, and the last cases have all been successful. We consider a good result a move-

Boston Med. &

ment of at least 50%, so that the patient can sit down and go upstairs. Amongst our patients have been officers of the army, who could take up their duty after operation. Care must be taken in the choice of patients, not people having no energy, which is required in the after-treatment. We have to prepare patients, giving them a good massage to reinforce the muscles, also we must not take patients who have ankylosis the result of an accident, who are claiming money, because these cases never give a good result. To gain entrance to the knee-joint we are using now the two lateral incisions. To prevent hematoma we put the knee-joint on a splint for the first two days and bandage tightly, and only from the third day begin with extension, but early we practice good massage of the muscles.

Dr. Edward Martin, Philadelphia: The patient mentioned by Dr. Murphy had run a stick in her cheek some fourteen years before, had a long suppuration as a result, and was operated upon. When I saw her there was a bony growth, a horn branching from the coronoid process to the greater wing of the sphenoid. The slight motion in the mouth was more accentuated on the good side, and the operation consisted in avoiding the facial nerve, especially in women, and chiselling across the bony spur; the result was quite satisfactory.

Dr. Murphy, closing: Passive motion should not be resorted to until the wound is healed. We put on extension immediately after operation. In hip cases it is put on before. In the jaw we place a plug between the two alveolar processes and maintain this until primary union takes place. Hematoma is one of the greatest and most difficult obstacles to a good result. We resort to aspiration as soon as it is recognized and continue that until the bleeding ceases and there is primary or secondary approximation without suppuration in the two surfaces of the wound.

CANCER OF THE TONGUE BASED UPON THE STUDY OF OVER 100 CASES.

Dr. Joseph C. Bloodgood, Baltimore: It has been demonstrated in this study that the failure to cure where cancer of the tongue is fully developed is due chiefly to the neglect to remove the muscles of the floor of the mouth below the cancer.

The high mortality after operations for cancer of the tongue is chiefly due to the removal of the floor of the mouth without removing at the same time a section of the lower jaw.

The investigation has also shown that if a lesion of the tongue is subjected to immediate operation within a few weeks after the onset of the lesion the chances of a permanent cure are best. In this stage it will usually be sufficient to remove the local lesion with a good margin of healthy tissue, and this removal should be accomplished with the electric cautery. The centre of the lesion should be preserved for microscopic study. While the chances are that the lesion will be found to be benign, should it prove to be cancer, the possibilities of cure are almost 100%. In the past surgeons have apparently performed too extensive operations upon the glands of the neck. This is theoretically incorrect, because cancer of the mouth infiltrates into the glands of the neck through the floor of the mouth. When the operation is performed in one stage, it is impossible to remove the tongue, the floor of the mouth, the glands, and then close the opening in the mouth, unless a section of the lower jaw is also removed. If the former operation is done thoroughly the mortality is almost 80% from primary or secondary pneumonia, or from late infection from the oral fistula. The author was first impressed with the facts when it was found that the first cured cases were either cancers originating in the floor of the mouth, or cancers of the tongue invading the floor of the mouth, in which it was absolutely necessary to resect portions of the lower jaw in order to remove the disease. The extent of the disease, therefore, forced the surgeon to the more radical and mutilating procedure and allowed him to perform removal *en bloc*. During the same period, earlier and more favorable cases were subjected to less extensive operations. When the floor of the mouth was not removed, local recurrence always followed, and when it was thoroughly removed the patients died from the operation. In November, 1910, the author for the first time, in a favorable early cancer of the tongue, removed the right half of the tongue, the right floor of the mouth, the right half of the jaw and the glands on the right side of the neck, all in one piece. The wound was closed by suturing the mucous membrane of the right cheek to the remaining half of the tongue. The patient was able to swallow at once after operation, and no recurrence followed. The microscopic study showed that the floor of the mouth was infiltrated, but the glands were not.

As the removal of the lower jaw, especially at the symphysis, is mutilating, the author has attempted to accomplish the same results in a different way. The glands of the neck are first removed, and after the operation, their connection with the floor of the mouth below the lesion is thoroughly burned with the cautery and the wound closed. Then the lesion in the tongue and floor of the mouth is attacked with the electric cautery. This is repeated two or more times until everything is destroyed down to the area of the first cauterization from below. The healed skin flap of the first operation forms the floor of the mouth and prevents an oral fistula. The first operation after this method was performed in April, 1912. The lesion was a cancer occupying the floor of the mouth between the tongue and the symphysis of the jaw. It was about the size of a silver dollar. Permanent cures have been accomplished in similar cases by *en bloc* dissection of the tongue, floor of the mouth, jaw and glands. The oldest case thus treated lived fifteen years, but the operation is very mutilating and recently a patient refused to submit to it. This led the author to attempt what he had had in mind for some years. Now, two years since the operation, there is no evidence of recurrence and no mutilation. Since then four other cases have received this treatment with, so far, apparent success.

The majority of cases of cancer of the tongue seek surgical aid at an unnecessarily late period. In every case the patient is warned—there is always something to be seen and felt in the tongue or floor of the mouth. If such a lesion is investigated at once, a local operation with the electric cautery should be sufficient; in a later stage removal of the glands and repeated cauterizations of the mouth lesions; in still later stages, resection of the jaw must be done. Recent experience seems to show that this operation should be done in stages: first, thorough removal of the glands, with cauterization of the floor of the mouth from the neck wound; second, cauterization of the lesion within the mouth; third, removal of the lower jaw and cauterized area. Cases

observed to 1908, compared with those of the past five years, show the influence of education. The very early precancerous lesions have increased from 8 to 30%. The late and inoperable cases have decreased from 18 to 10%. The cures have increased from 21 to 50%.

In the 14 cases personally operated upon by these newer methods in the past five years, there has been no postoperative mortality, and so far but one patient is dead from recurrent carcinoma, and there is evidence of recurrence in only one case. Considering all the cases studied the postoperative mortality has been about 22%. The results in the 14 cases also demonstrate that the improved methods promise a much larger per cent. of permanent cures and a longer freedom from recurrence.

DISCUSSION.

DR. MORESTIN, Paris: The prognosis of cancer depends chiefly on the time of treatment and upon the methods employed. The complete extirpation of the menaced or invaded lymphatic channels and glands is absolutely necessary, as essential as the removal of the cancer, which should be done by cutting wide of the tumor mass. For instance, in the case of carcinoma of one side of the tongue, which is very common and quite typical, the part of the organ corresponding to the diseased section should be extirpated, as well as the floor of the mouth and all the subclavicular carotid and submaxillary glands and those glands lying below the hyoid bone. The carotid region should be carefully closed by sutures uniting its muscles,—the external wound should be completely closed, the bucco-submaxillary wound packed and food given only through the stomach tube until cicatrization of these wounds. The patient should be allowed to get up on the day of the operation or on the following day.

DR. CHARLES H. MAYO, Rochester: I was glad to hear Dr. Bloodgood speak of heat. Removal by the Paquelin cautery is not satisfactory, for this is too hot. The crusting that ensues from the boiling of the blood on the white-heated instrument is the best protection for the tissues, better than asepsis. The heat must be a direct heat, the electric heat, the actual cautery; we must have something that broils and does not cut tissue.

DR. BLOODGOOD, closing: We may express ourselves in regard to cancer, that in most regions where the disease comes we have conquered the technic; the question is simply one of conquering the disease.

THE FUNCTION OF THE GASTRO-ENTEROSTOMY OPENING IN CASES OF PERMEABLE PYLORUS.

PROF. HENRI HARTMANN, Paris: It is generally accepted that in the presence of a permeable pylorus, the gastro-jejunal opening is inclined to obliteration in consequence of its physiological uselessness, the chyme following the pylorus. These two affirmations seem to us mistaken. The gastro-jejunal stoma well lined by mucous membrane, without ulceration whatever, without any scar tissue, remains permeable forever. We have collected 44 cases of obliteration of the gastro-jejunal stoma: 37 cases of pyloric or subpyloric stenosis, 4 indisputable cases of peptic ulcer, only 3 cases of free pylorus. On the other hand, the persistence of the gastro-jejunal stoma, in the cases where its functions were useless, has been observed anatomically by Henck after three months, by Lebenen after 28 months, by Busch after six years; we ourselves have seen it after 4 years in the case of an ulcer of the lesser curvature. The functions of the gastro-jejunal stoma take place even when the pylorus has been found permeable. Our experiments on dogs have shown that, if the opening is situated on the cardiac part of the stomach, the chyme passes almost altogether through the pylorus; but this is not true if the opening has been made in the pyloric antrum. In this last case the gastric contents pass almost altogether through the stoma. These differences are explained by the fact that the stomach has to be divided physiologically in two parts, one cardiac part, a simple reservoir allowing the action of the secretions on the ingested food, another pyloric part, a motor thrusting the gastric contents into the intestines. The radiological examinations made on our patients with a permeable pylorus, who underwent gastro-enterostomy, confirms the results of our experiments on dogs. Briefly then, there is no more fear to be had of an anatomical obliteration of the gastro-jejunal stoma in the cases of a permeable pylorus than in any other case. These stomata are physiologically useful when they are established in the pyloric antrum in the neighborhood of the greater curvature.

DR. J. M. T. FINNEY, Baltimore: I always hesitate to discuss a paper on gastro-enterostomy because I am willing to admit prejudice to start with. My own feeling about the operation is that it is never the operation of choice, always the operation of necessity. Professor Hartmann's observations are in entire accord with my own. It is never my practice to close the pylorus in doing gastro-enterostomy. It has never seemed to be necessary but once or twice. The more I study the x-ray in connection with stomach cases, the less dependence do I place upon it. If it agrees with the clinical picture I accept it as corroborative evidence. The well-established idea that in the face of a closed pylorus the new opening will never close, is not true. A case came under my notice recently operated upon by Dr. Gerster, which statement is sufficient evidence that the operation was well done in the beginning. A posterior gastro-enterostomy had been done in the face of an obstructed pylorus by scar tissue. The man came under my care with symptoms of almost complete obstruction. I operated and found the pylorus absolutely obliterated. The mucous membrane was completely restored. There was a natural closure of the pylorus after the opening made by Dr. Gerster, which opening functioned for about five years. For four or five months the obstructive symptoms increased, and when I operated the new opening was not larger than a straw. This shows that it is possible for the new opening to close in the face of a closed pylorus.

DR. ARPAD G. GERSTER, New York: I wish to add one point regarding the interesting observation of Dr. Finney's, which he omitted but which I consider very important. The operation was done with the aid of the Murphy button, and the very observation given by Dr. Finney has been repeated by me in a number of other cases operated on ten years ago and again six or seven years ago, when the Murphy button was more frequently used. When these apertures were inadequate, and when a peptic ulcer developed, as Dr. Hartmann suggests, along the juncture of stomach and jejunum, the inadequate aperture closes more promptly and rapidly than where an ample stoma is established.

Boston Med. &

DR. FRED B. LUND, Boston: In connection with Dr. Finney's remarks I wish to report a case of closure of the stomach. Dr. Weir did a gastro-enterostomy ten years ago on a patient, then aged 63; for ten years there was dilated stomach with visible peristalsis. Upon operation I found the stoma had closed to the size of a lead pencil. One-half of the intestinal button had gotten back into the stomach and stuck in the pylorus so that it was necessary to do a Finney operation, which had been most applicable in my hands, where gastroenterostomy has not been satisfactory. In another case, that of a woman upon whom I had done a gastro-enterostomy for extensive indurated ulcer of the lesser curvature four years previously, I found upon undertaking to remove a fibroid, the pylorus and gastro-enterostomy wound both open. This goes to confirm Professor Hartmann's observations.

DR. JOHN BAPST BLAKE, Boston: In Professor Hartmann's valuable paper he spoke of the paper by Cannon, in which I did the operative work on cats. In our conclusions we did not state that food would invariably pass out through the pylorus, but that the physiological tendency was that it would pass through the pylorus. We would, therefore, differ from the conclusions of Professor Hartmann, and say that the tendency is invariably to go through the pylorus if the pylorus is open. Our second observation agreed with Professor Hartmann's upon the inefficiency of a stoma placed in the cardiac end of the stomach.

EXTIRPATION OF THE SPLEEN FOR DISEASES OF THE BLOOD.

DR. RANZI, Vienna. About 20 extirpations of the spleen for diseases of the blood are reported, performed at the Surgical Clinic of Prof. v. Eiselsberg, Vienna. The indications for these operations made by Professor Eppinger were: —

Hemolytic icterus (3 cases.)

Pernicious anemia (5 cases).

Banti's disease and hypertrophic cirrhosis of liver (9 cases).

Thrombophlebitic forms (3 cases).

From all these cases four patients died after the operation (shock, ileus of duodenum, 2 pneumonia). The results in the other 16 cases were very satisfactory. The patients, formerly very weak and obliged to keep their beds, have regained their strength and weight and are again able to work, especially the cases of pernicious anemia. In pernicious anemia the extirpation is very easy; in other cases sometimes very difficult on account of the excessive adhesions and enlarged blood vessels. The operations were performed under local anesthesia.

DISCUSSION.

DR. J. M. T. FINNEY: During the last year I have operated upon three of these cases,—two of the pernicious anemia type and one of the Banti type. All have made excellent recoveries, and one case presented the interesting anomaly of a double spleen. The oldest patient had been kept alive for a year by repeated transfusions. For about a year now she has had a perfectly normal blood picture and, so far as one can tell, she is absolutely well. This patient belonged to the pernicious type. The other two patients have been operated upon so recently that it is impossible to say what the results will be, but the immediate results have been most satisfactory in all three cases.

OUR EXPERIENCE UP TO DATE IN THE TREATMENT OF MALIGNANT TUMOR BY RADIUM IN THE CLINIC OF VON EISELSBERG, VIENNA.

DR. RICHARD SPARMAN: Since July 1913, 52 cases of inoperable malignant growths have been treated with radium at the clinic of Professor v. Eiselsberg in Vienna. We had 225 mg. radium and 150 mg. mesothorium at our disposal divided in fifteen applicators. Malignant tumors have been exposed curatively or preventively, following not radical operations. Preventively used, it seemed to hasten the recurrence in nearly all our cases. There is not such a thing as elective effect, the tumor cell is not more easily destroyed because of the specific action of the radium itself, but being a degenerative cell it is more susceptible to any trauma. The histological changes in the tissues are not specific. The effect of the radium is only a local one. The hopes we placed in the radium as a new and successful means in the treatment of malignant tumors have not been realized.

DISCUSSION.

DR. ROBERT ABBE, New York: I think it is borne out by our experience that carcinomatous tumors in the sense of the malignant carcinomatous nests of cells are destroyed by radium, not by a specific action, but through a necrotic action, or through a secondary anemia from dilatation of the vessels supplying the parts. You produce atrophy of the tissue if you give a judicious dose of radium. If you give too much of a dose, as von Eiselsberg has demonstrated, you produce a toxemia from absorption of the necrotic tissue. Upon sarcoma and other life-destroying tumors radium has a specific action. Take, for instance, a myeloid sarcoma, a tumor springing from the true myeloid tissue of the bones, that myeloid tissue will be driven back to a normal line of cell action by the simple application of radium. A jaw bone destroyed entirely by a neoplasm of pure myeloid structure will be reformed as bone resembling the same structure as the orginal bone. I have one such case now well aften ten years, in which you cannot see the difference in the two sides, except that one is a little thicker. This result has been repeated in ten or twelve cases of myeloid tumors. If this is not specific action there is no such thing as specific action. Not alone the myeloid sarcomas, but also the round cell sarcomas are favorably affected.

DR. K. A. J. MACKENZIE, Portland, Oregon: I would like to mention the value of a simple radium apparatus seen in Paris three years ago. It has a maximum strength of 5,000,000, which means that the uranium being the unit, it has 5,000,000 times the strength. I have used it in 18 cases, chiefly superficial cancers and in two or three cases of keloid, and in three or four cases of angioma in little children, telangiectases of the scalp. In all the cases the results have been truly remarkable. One patient treated for an epithelioma on the bridge of the nose received about 175 hours of exposure, but without any impression. Two months later she told me that this cancer had absolutely disappeared without leaving any scar. The same remarkable results have been obtained in angiomata and epulis. It must be remembered also that these results are obtained from the use of a relatively weak apparatus.

DR. JAMES E. MOORE, Minneapolis: A patient suffering from a well-established malignant growth of the breast refused operation and came to New York. An incision was made in the tumor direct and a radium tube applied after the x-ray had proved ineffectual. She became discouraged, returned to her home in Dakota and was referred to me by her home physician for operation. I did the radical operation on the breast, which had a large crater in it, foul smelling and gangrenous. A few months later I had a letter from the physician in New York asking for a report on the tumor. I have to report to him that beyond the immediate area where the sloughing had taken place there had been no change whatever in the growth. It was an adenocarcinoma just as if the radium had not been used. The patient is now living and well.

DR. SPARMAN, closing: We have also seen in one or the other case a very surprising effect by irradiation. We feel that it is now allowable, however, to draw any conclusions from single cases. We have seen definite results only in superficial processes. If we were sometimes able to destroy a deep tumor, a local ill effect, as well as a very bad influence on the general condition has been observed in some of the cases, and the final therapeutic results were very questionable indeed.

RESULTS OF TREATMENT OF CYSTIC DISEASE OF THE BREAST.

DR. ROBERT B. GREENOUGH, and (by invitation) DR. CHANNING C. SIMMONS, BOSTON.

The authors have given the following conclusions:

1. Of 83 cases of partial operation for cystic disease of the breast, 17, or 20%, were successful.
2. In 4 cases carcinoma occurred in the breast tissue left by the partial operation, 4.8%.
3. In 5 cases the disease recurred, only in the other breast, 5.9%.
4. In 8 cases the disease returned in the breast tissue left by the first partial operation, 9.6%.
5. The occurrence of carcinoma in cases of cystic disease, estimated at about 10% of cases, demands radical treatment in all but the mildest cases.
6. The operation of choice should remove all of the gland tissue of the affected side, and when the disease is bilateral, of both sides.
7. This can best be accomplished by subcutaneous amputation, leaving the nipple and areola, or by elliptical amputation.
8. Where grave doubt as to diagnosis is present, elliptical amputation is to be preferred.
9. Local excision of nodules in the breast, suspected of being malignant, should never be performed.
10. The operation of local excision or partial plastic resection should be restricted to the earliest and mildest types of cystic disease. In such cases plastic resection is to be preferred.

DISCUSSION.

DR. J. M. T. FINNEY: In my own experience in private practice, by far the most frequent condition for which I am consulted is cystic disease of the breast. This is not true in dispensary cases, where inflammatory diseases are more common. There is no doubt of this condition being an etiological factor in carcinoma. The disease is one of earlier life than we have usually considered. The usual symptom that brings the patient is pain in the breast. The disease is a protest against modern civilization, because I find that the class of women affected with this trouble is made up of that group of women who are married and childless; next to that, the women who are married, have one or two children, but have not nursed them; after that comes the unmarried women. The mothers of ten or twelve children, nursing them all, are exempt in my experience. The treatment is the serious question; the diagnosis is easy. If this is a disease which is followed by carcinoma in a large percentage of cases, are we not in just the same position as in relation to gastric ulcer, etc. If one operates at all, and the question must remain an open one, one should operate only by removing the entire gland.

DR. ALBERT J. OCHSNER, Chicago: In my own experience of three cases in which malignancy followed this condition out of not quite 100 cases,—in about 4%,—we find a condition in which, according to the law of probabilities, there will be a large proportion of carcinoma cases. Then by doing a partial removal, we change a carcinoma case in its most hopeful stage into a carcinoma case that does not promise very much. We have the development of carcinoma as a result, rather than upon the basis of long-standing irritation. This long-continued irritation seems to prepare the tissues, as Dr. Mayo said yesterday, for the carcinoma infection. Thus in many cases there is an acute irritation which gives this infection an active start. In these cases under my observation that acute irritation was furnished by the operation. In the first case of this kind which I observed while an assistant to Nicholas Senn, none of us had the slightest idea that there was any malignancy until the specimen was carefully sectioned, when we found an absolutely positive carcinoma so small that we would surely have missed it at an immediate examination. I think I can agree with all the conclusions of Dr. Greenough, but in particular I want to emphasize that no specimen for examination should ever be removed. In all my experience of carcinoma of the breast in which a specimen was removed for examination I have never encountered a case in which the carcinoma did not kill the patient.

DR. CHARLES H. MAYO, Rochester: I want to express our favorable opinion of the Warren operation which can be done without mutilation. If the operation is not a double one, and the patient worries over the loss of the breast, in our growing knowledge of the transplanting of fat, it is easy by rolling up a big pedicle of fat from the abdominal wall to build a new breast. We occasionally find cancer developing in the scars of lactation abscesses. When operating to remove simple tumors of the breast I always have a fear that the scar may later undergo malignancy. I believe that the Warren operation, if well understood by the laity, would permit women to come at an earlier period without fear of mutilation.

DR. C. B. G. DENANCREDE, Ann Arbor: I want to place myself on the side of those who would rather err on the side of radical work than on the side of conservatism. In my experience I am afraid of the partial operation; in a woman who has passed the child-bearing period, I rarely hesitate to advise a radical operation; and again and again, and again, when I have hesitated to give that advice, the microscope has demonstrated that I should not have hesitated. I do not believe the

Boston Med. & S

majority of us can make these fine certain safe differential diagnoses in diseases of the breast.

Dr. N. B. Carson, St. Louis: In a considerable experience with these cases, I have yet to follow a case in which I did the partial operation in which the disease has not eventually returned, requiring complete operation. Regarding the uncertainty of these pathological examinations at the time of operation, I have a case similar to the one cited by Dr. Ochsner in which there was a small nodule only. In making the examination I thought I was dealing with a fibrocystic condition, when I discovered a little nodule, not bigger than a pea and as hard as a rock. I did the complete Halsted operation, for which I was very glad when the report came back of malignancy.

Dr. Greenough, closing: I feel that it is far safer to watch a case between 20 and 30 years of age than another between 30 and 40 years, or between 40 and 50. With the increasing age of the patient comes the demand for more radical operation.

BLEPHAROPLASTY BY A PRE-GRAFTED FLAP.

Dr. C. L. Gibson, New York: The older operations for plastic repair of the eye-lid were, for the most part, defective from exaggerated shrinkage and that the raw surface was made to lie in contact with the eye-ball. The author's method consists in preparing a flap which is lined with a skin graft entirely healed and provides against eventual shrinkage of the flap. The grafted skin which comes in contact with the eye-ball assumes the character of the mucous membrane and furnishes a free edge and movable eye-lid. The operation is done in two stages. The best flap is a modification of that devised by Fricke, the flap being taken from the skin above an external to the external canthus. At the first stage a horizontal incision, starting at the external canthus, is made corresponding to the length of the proposed flap. This incision is undermined so that a pouch is made into which the skin graft is tucked, raw edges in contact. This is allowed to heal in place, and in about ten days the second stage is completed by cutting away the diseased area of the eye-lid and transplanting the pre-grafted flap into the defect and suturing it accurately into place. The results of this operation physiologically and cosmetically have been most satisfactory. The operation is destined to compete favorably in the treatment of malignant growths of the eye-lid with the newer remedies, such as radium and x-ray which, however, lack a guarantee of permanent cure as ascertained by such radical operations.

DISCUSSION.

Dr. Samuel J. Mixter, Boston: The method proposed by Dr. Gibson has the advantage of giving a flap which will not adhere and will not roll in. It seems to me that this principle might also apply to large flaps transplanted from other parts of the body. In cases of destruction of the eyelids and in the cicatricial contractions after burns where it is necessary to use a large flap, I have found that one transferred from the abdominal wall worked beautifully carried by the wrist. This addition of grafting would add greatly to such a procedure.

UNCOMPLICATED TUBERCULOUS FOCI IN BONES AND THEIR TREATMENT.

Dr. Thomas W. Huntington, San Francisco: The author deals with cases in which the focus exists: (a) as an incipient lesion, but sufficiently advanced to cause symptoms; (b) as a lesion that has recurred after a period of quiescence. In neither case has it become the seat of mixed infection nor invaded the adjacent joint. Exception is taken to the conservatism of the orthopedist where the focus is accessible through an extra-capsular route. Attention is called to the too frequent and humiliating failures at the hands of men of great skill and experience and to the general surgeon is suggested the propriety of assuming jurisdiction in early cases. The term "latency" in this connection is regarded as a misnomer. An analogy is insisted upon between tuberculous foci and such a pathological group as gall-bladder disease, chronic appendicitis and renal lithiasis. The propriety of early operative treatment depends upon: (a) accurate diagnosis; (b) localization. In the acute fulminating cases delay is hazardous. Operative technic is fully set forth. Sixteen cases are reported; in no case was the result unsatisfactory. Special attention is called to three cases of hip-joint disease in which the average time of treatment was six months and which were well with good function after a lapse of eleven, ten and eight years respectively.

DISCUSSION.

Dr. Arthur W. Elting, Albany: For a number of years I have been able by the use of tuberculin to make a diagnosis in these cases in a very early stage when surgery is most hopeful. Another point is the exclusion of certain cases treated for tuberculosis when not tuberculous in character. I have recently had called to my attention a case treated for tuberculosis of the hip upon x-ray findings. The plates showed nothing conclusive to me of either tuberculosis or any other disease. The child was given the usual test with tuberculin up to 7 or 8 mgms., without any reaction. I had the case removed about six months ago and the child is still remaining perfectly well. That experience is typical of a considerable number of cases in which the diagnosis is incorrect and in which tuberculin is of great value.

Dr. Russell, Melbourne, Australia: I entered upon my early surgical treatment of hip disease in children with great hopefulness and considerable enthusiasm. But I found my enthusiasm waned and my hopes disappointed, and finally came to believe that the best results could be obtained by expectant treatment and rest. In my experience a focus that can be definitely recognized is in itself a late manifestation. That is the answer, it seems to me, to the suggestion of the efficacy of early operative interference.

Dr. Thomas W. Huntington, closing: As I said in my paper, I did not expect to put a pin-point on the focus. I believe the extra-articular approach to an area which has been infected is innocuous, and I believe it is perfectly innocuous to remove all of the intramedullary tissue, knowing that there is tuberculous infection in that area. It has been done and the period of treatment shortened from years to months. The patient's functional results have been altogether satisfactory, where they have been 60% unsatisfactory in the cases within my knowledge treated by the ordinary method. I believe the cleaning out of the point is the main feature. In a case called to my attention after four years of careful orthopedic treatment the head of the bone was cleaned out. The case was operated upon successfully and was entirely well at the

end of a year. In this particular case I believe the child's general health would have been enormously conserved by the early operation and the result as good if not better than that later obtained.

A REVIEW OF CASES OF FRACTURE OF THE PATELLA.

DR. W. BEECKMAN DELATOUR, Brooklyn: While a decade ago surgeons were divided concerning the necessity of open operation, today they are united, regarding the patella, upon early operation. Concerning the long bones opinion still differs. In 87 patients there was a total of 101 fractures. Three were simultaneous of both patellae and in one there was also a fracture of the cervical vertebra. Upon these cases there were 96 operations with no operative mortality, and in all, useful joints resulted; in four motion was somewhat limited. The operation consists in a curved transverse incision across the knee above the patella, suture of the tears in the lateral capsule, and across the front of the patella with chromic catgut. These were reinforced by a suture passed through the patella tendon above and then below in mattress fashion and then tied. The object of the suture is to relieve the transverse sutures of strain when there is contraction of the quadriceps muscle, especially when recovering from anaesthesia. Early passive motion is important. A posterior splint should be worn for at least 12 weeks. Operation was as a rule, done at the end of 48 hours. Results where the bone was broken in several fragments were as good as in the simple transverse cases.

DISCUSSION.

DR. JOHN J. BUCHANAN, Pittsburgh: My experience is limited to 35 cases, and since my first operation I have no recollection of any case of fracture of the patella coming under my care which was not opened and sutured. Within the last few years, according to the suggestion of Judd, I have given up drainage and now use the closed method entirely, and within the last ten years I have depended upon dry wiping of the joint without irrigation. The incision in nearly all cases has been transverse right across the line of fracture, because I think the possibility of refracture with the breaking through of the scar is very remote. This line of incision gives a better access to the bone itself and is of advantage in the matter of lateral expansion of the vasti which is of importance in closing. I have followed all my cases and so far as I know no patient has had an immovable joint. The best recommendation I can give to the operation is that I have been required in only one case to take out the wire.

DR. DELATOUR, closing: We make it an invariable rule to operate as soon as possible after the operation, usually at the end of 48 hours. There is no reason for waiting, and it is important to get the patient on the road to recovery as soon as possible.

FRONTAL SINUS SUPPURATION; THE ESTABLISHMENT OF PERMANENT NASAL DRAINAGE; THE CLOSURE OF EXTERNAL FISTULAE; EPIDERMIDIZATION OF SINUS.

DR. HOWARD A. LOTHROP, Boston: Intranasal treatment for frontal sinus suppuration should always be given a thorough trial before instituting more extensive operations. The results of external operation in obstinate cases are mainfested by many successes obtained by all methods and also by many failures. The problem presented is the healing of suppuration in a natural bone cavity surrounded entirely by rigid walls. No method that I know of takes full advantage of the anatomic possibilities. After a trial of two years the following technic is briefly suggested: A small opening is made in the frontal bone just above the upper extremity of the nasal process of the superior maxilla. The sinus is explored. The probe is passed through the ostium into the nose and left in this position while the anterior ethmoid cells are broken through with a small curette. Then, working from above, but chiefly from below, all the dense bone situated at the base of the nose is removed. This includes the interfrontal septum, the nasal spine, the nasal crest, the upper, thick ends of the nasal bones and nasal processes.

Book Reviews.

A Manual of Infantile Paralysis. With Modern Methods of Treatment, etc. By DR. HENRY W. FRAUENTHAL, surgeon and physician in chief, New York Hospital for Deformities and Joint Diseases; and DR. JACOLYN VAN VLIET MANNING, epidemiologist, Wisconsin, 1908, Epidemic Acute Poliomyelitis. Illustrated. Philadelphia: F. A. Davis Company. 1914.

While this book contains a mass of facts in relation to infantile paralysis, these are undigested and badly arranged. The books shows many evidences of entire lack of the critical faculty in the writers, and of haste in its preparation. It need detain no serious student of the question.

A Text-Book of Military Hygiene and Sanitation. By FRANK R. KEEFER, A.M., M.D. Illustrated. Philadelphia and London: W. B. Saunders Company. 1914.

At a time when, by reason of the great European War, general professional interest and attention are more than usually drawn to topics of military medicine and surgery, there is particular pertinence in this manual by an American expert. As lieutenant-colonel in the United States army medical corps and professor of military hygiene in the United States military academy at West Point, Dr. Keefer writes with recognized authority. In the chapter on venereal diseases he advocates the isolation of infected prostitutes, restoration of the army canteen, and so-called venereal prophylaxis. The chapter on physicial training is contributed by Captain H. J. Koehler, M.D., director of physical training at the West Point Academy. The book is well illustrated with 47 text-cuts and has an excellent glossary and index. It should prove of value not only to members of army medical corps, but to students and physicians in civil life.

Boston Med. & S.

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W. M. LEONARD,
101 TREMONT STREET, BOSTON, MASS.

A MILK-BORNE EPIDEMIC OF SEPTIC SORE THROAT.

As in similar instances previously recorded, a useful lesson is to be drawn from a severe epidemic of non-diphtheritic septic sore throat, a report of which appears in the lastest issue of *Health News*, the monthly bulletin of the New York State Department of Health. The outbreak occurred the past summer in Rockville Centre, a village of 4250 inhabitants situated on Long Island, about six miles from the eastern boundary of New York City, and was clearly traceable to contaminated milk. During the first half of June over two hundred cases of the disease developed in this village, while among the 4500 inhabitants of Lynbrook and East Rockaway, which immediately adjoin it on the west, no cases were reported. It soon became apparent that the common element among the infected persons was their milk supply, for about 90 per cent. of the sick were found to have used milk from a single dairy in the adjacent farming hamlet of Oceanside. The conditions at this dairy were conducive to the spread of infection, as the owner had recently moved to the farm, the milk-house and barns were unfinished, and the facilities for washing the utensils and bottles were inadequate. The first case of which there is a record was that of the daughter of the proprietor and operator of the dairy, and this was followed by other cases there. The onset of the epidemic was insidious, for the existence of sore throats among the persons at the dairy was not reported to the health authorities, as required by the sanitary code, and the nature of the outbreak was not suspected by the local physicians until after a number of cases had developed in different parts of the village. On June 6 it became serious, and for the next nine days there was a daily average of twenty-five new cases. After the 14th very few persons were attacked, and the last case developed on the 30th.

The sickness was a severe form of sore throat, associated with marked general pain and prostration. In 62 per cent. of the cases in which the temperature was taken the fever ranged from 102° to 104°, and the glands of the neck were enlarged in all except the mild cases. Chills were definitely reported in 81 per cent. of all the cases; nausea in 69 per cent.; follicular tonsillitis in 40 per cent.; and enlarged cervical glands in 66 per cent. Complications, which were noted in mild as well as severe cases, occurred in 21 per cent. A severe form of acute articular rheumatism developed in seven cases; one patient suffered from appendicitis and peritonitis, and one had facial erysipelas. Two fatalities occurred—one due to recurrence of a previous heart trouble in a rheumatic case, and the other to a septic pneumonia. In most of the cases the attack came on with great suddenness. In about one-quarter of them it lasted four days, or less, in about one-half, from five to eight days, and in 10 per cent., over two weeks; while in several of the rheumatic cases the patients are still ill. In a bacteriological examination of throats made in twenty-five instances, all showed a marked preponderance of hemolyzing streptococci. Altogether, the records of 232 cases were obtained from the local physicians, and, as in other epidemics of the kind which have been reported, a preponderance of cases occurred in young adult females.

An investigation of the Oceanside dairy was made on June 15, when samples of milk were taken from each cow, and cultures from the throat of each person employed on the premises. A predominance of streptococci was found in the throats of the owner and of two of the milkmen. It was deemed advisable to remove four cows from the herd, and orders were given that no milk should leave the place unless it were pasteurized, or the persons whose throats showed symptoms of disease abstained from milking or handling milk. These orders were disobeyed, however, and on June 29 a guard was posted by direction of Health Commissioner Biggs to see that no products left the farm. On July 2 an

inspection of the dairy was made by Dr. H. D. Gill of the State Department of Agriculture, and six cows were condemned by the tuberculin test. Samples of milk from the remaining cows were taken, and found to be free from streptococci. The resumption of the sale of milk was made dependent, first, on a satisfactory bacteriological examination of the throats of those handling the milk; second, on written evidence of the healthfulness of the remaining cows, given by the State Department of Agriculture; and, third, on the certification by the family physician that every person who is to be engaged in producing or handling milk is free from all evidence of illness.

The report in the bulletin is made by Dr. Frank Overton, sanitary supervisor of Suffolk and Nassau Counties, Dr. Charles Krumwiede, assistant director of the research laboratory of the New York City Health Department, and Dr. A. D. Jaques, health officer of Rockville Centre, and they express the opinion that the experience of this epidemic leads to the conclusion that the following measures are of the utmost importance in every municipality:

1. The prompt reporting by practising physicians of all cases of sore throat and other infectious diseases among employees in dairies.

2. The exclusion from dairies of every person having an infectious disease, even if it appears to be only a common sore throat.

3. A prompt quarantine by the local health officer of every dairy the owner or manager of which fails to exclude helpers who are known to be infected.

4. The pasteurization of all milk supplies.

THE COUPON SYSTEM OF MEDICAL INSTRUCTION.

IN the issue of the *Monthly Announcement* of the Harvard Graduate School of Medicine for Sept. 15 appears an editorial calling the attention of the "local profession" to the special opportunities for medical instruction offered by the school through its "coupon system," a method designed especially to appeal to busy practitioners.

"From the beginning the Graduate School of Medicine has aimed to interest this local body of the profession, and to be of benefit to them and to their communities. We have organized a number of courses especially for the local profession. Frankly speaking, we have not had as great success with these courses as we hoped to have. . . . . .

"The coupon system is designed to enable physicians to attend single exercises, or parts of courses, with as little inconvenience as possible. The coupons are issued in books of twenty each, and may be obtained by applying to the Dean's office. The price of a coupon-book is fifteen dollars. Possessed of one of these books, a physician may attend any one of a large number of exercises by paying to the instructor the proper number of coupons. The *Monthly Announcement* gives each month a list of the exercises that may be attended in this manner, and the number of coupons to be paid for each exercise. All the weekly courses are included in this list, besides a large number of standard courses of general interest in a variety of subjects. The coupons will be received in payment for courses without limitation of time, and unused coupons may be redeemed for eighty per cent. of their value within a specified period. The length of this period is determined by the date of the end of the second term after the one in which the coupon-book is issued, thus varying from eight to twelve months. The charge for a single exercise, reckoned in coupons, is only a little greater than would be paid for the same exercise in a course ticket. It would be cheaper for a physician to pay by coupons than to lose several exercises on a course ticket. Furthermore, a coupon-book purchased with the intention of attending a certain course will be good for attendance in exercises in any course in the future, without further formality. The whole arrangement is planned to protect the physician from loss and to serve his convenience as far as possible. We are confident that many more will take advantage of this scheme when they understand its possibilities."

The range of instruction thus opened to practitioners is very wide, and one of which it is to be hoped that more advantage will be taken in future than has hitherto been the case. In fairness, it should be noted that the coupon system has been criticized as encouraging superficiality and as reducing post-graduate medical teaching to a commercial basis inconsistent with its dignity. Some instructors do not care to collect coupons at the beginning or end of each exercise, and some have refused to receive students for occasional exercises on the coupon method. Nevertheless, the system is one which seems likely to find favor and to increase in use. As a matter of fact, attendance at any school of instruction is likely to grow in proportion to the intrinsic merit of the instruction offered, and independent of advertising or special systems of any sort.

Boston Med. & S.

THE SPEEDING AMBULANCE.

In the language of the daily press, any sick or injured person is always "rushed to the nearest hospital." Unfortunately it is often an official ambulance that does the "rushing," sometimes with disastrous consequences to innocent and unsuspecting pedestrians, not always with benefit to the patient. Two recent instances in Boston illustrate the evil of the speeding ambulance.

A furiously-driven police ambulance, conveying a man not seriously injured to a hospital, knocked down a woman and her baby, fortunately without important damage to either. In the second case an automobile ambulance bringing a patient from an adjacent town, ran over a boy who later died in the hospital of a fractured skull. The chauffeur, who was pitched from his seat by the impact of collision, sustained a compound fracture of the elbow requiring amputation. Both these vehicles, at the time of accident, were breaking traffic regulations and exceeding the speed limit.

The speeding ambulance, with its clanging gong, is a barbarism, a sensational, though perhaps unconscious, play to the galleries, quite foreign to the spirit of the profession. Few surgical emergencies, in which there is any possibility of help from anyone not on the scene, require such breakneck haste. Few sick patients really suffer from delay of transportation; few would not be better for being moved more slowly and gently. Moreover, the rights and safety of the greater number should be regarded. Laws against overspeeding are rigorously and rightly enforced against physicians in the regular discharge of their duties: they should be equally enforced against ambulances. The ambulance is not a fire-engine and should not be suffered to behave as such.

MEDICAL NOTES.

Bubonic Plague in New Orleans.—Report from New Orleans, La., states that on Sept. 2 another human case of bubonic plague was discovered in that city, making a total of 24 since the outbreak of the present infection on June 27. There have been 78 rodent cases.

Three Living Western Centenarians.—Harriet Harper, of Atchison, Kas., is said to have been born in 1812.

Lydia A. Sharpless, of Whittin, Cal., is said to have been born on Sept. 6, 1810. She has 13 living grandchildren.

Mrs. John Waldron, of Mountain Home, Marion county, Ark., is said to have been born on Sept. 5, 1802, in Ohio county, Ky. She is the mother of 16 children and has a total of 723 descendents. She walks five miles daily and reads without glasses.

Prevalence of Pellagra in Italy.—An ararticle in a recent issue of *Il Policlinico* states that in 1881 there were 104,000 cases of pellagra in Italy, and in 1910 only 34,000. The disease is still endemic in 34 provinces of Italy and causes about 4000 deaths annually.

A Case of Indian Quintuplets.—The *Lancet* of Aug. 22 reports and vouches for a case of quintuplets, born to a Schanar woman of 25 at the Malagumuda Orphanage, Zuckalay, Travancore on June 23, 1914. The children were all females.

American Electro-Therapeutic Association.—The twenty-fourth annual meeting of the American Electro-Therapeutic Association was held in Battle Creek, Mich., on Tuesday, Wedneday and Thursday of this week, Sept. 15, 16, and 17, under the presidency of Dr. George E. Pfahler, of Philadelphia. The presidential address was on "Electro-thermic Coagulation and Deep Roentgen Therapy in the Treatment of Malignant Disease." Dr. Frank B. Granger, of Boston, vice-president of the Association, presented papers on "Direct Continuous Current, Including Electrolysis, Electro-chemical Surgery, and Ionization" and "The Use of the Condenser Discharge in Muscle Testing"; Dr. Loring T. Swaim, of Clifton Springs, N. Y., on "Treatment of Chronic Arthritis"; Dr. Fred H. Morse, of Boston, on "The Non-surgical Treatment of Intestinal Stasis"; and Dr. T. D. Crothers, of Hartford, Conn., on "Some New Potentialities Associated with Electric Energy."

Travel Study Club of American Physicians.—The Travel Study Club of American Physicians, which made a successful Study Tour of Europe last year, has completed the plans for its 1915 Study Tour to the A. M. A. meeting in San Francisco, Honolulu, Japan, The Philippines, China, with optional return via Siberia and Europe, was permitting, or via Canada. This being the first party of American physicians ever visiting the far east and the new possessions of the United States, a most cordial welcome can be expected by authorities and members of the medical profession. The Travel Study Club would like to make its enterprise as representative as possible and asks all those interested to communicate with the secretary, Dr. Richard Kovacs, 236 East 69 Street, New York.

European War Notes.—It is announced that on account of the war, the publication of the

1914 edition of the British pharmacopoeia has been indefinitely postponed.

All medical congresses, called to meet at European cities during the next year have also been postponed.

It is reported that Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, has been appointed medical director of the French military hospital at Lyons.

Report from Copenhagen on Sept. 4 states that both typhoid fever and Asiatic cholera have appeared in Berlin.

Report from Bremen on Sept. 4 states that the emigrant railroad station of the North German Lloyd Steamship Company, of that city, has been assigned to the Red Cross for hospital use.

Dr. William J. M. A. Maloney, of the Fordham University School of Medicine, New York, has accepted a commission as lieutenant in the British medical service, and will be attached to the surgeon-general's staff.

Report from Petrograd on Sept. 6 states that the Russian government has authorized the Red Cross Society to import drugs and surgical instruments free of duty during the war.

On Sept. 7, the total national subscriptions to the American Red Cross fund in the United States amounted to $142,000 of the $1,000,000 which it is desired to raise. On Sept 11 the total amount subscribed in Massachusetts was $17,347.35. Contributions of bandages and clothing are also requested.

On Sept. 8 there sailed, on the Greek liner *Ioannina,* a Red Cross unit which has been assigned to service with the Servian army. The nurses are in charge of Miss Mary E. Gladwin, formerly superintendent of nurses at the Woman's Hospital, New York, and later at the Cleveland City Hospital, who was in charge of the Red Cross nurses in Dayton, Ohio, at the time of the great flood there last year.

The sailing of the American relief ship *Red Cross,* which was announced in last week's issue of the JOURNAL as for Sept. 10, has been indefinitely postponed on account of a protest by the Allies. The unexpected objection of the representatives of Great Britain and France to the sailing of the *Red Cross* is on the ground that among her crew were many unnaturalized German seamen and stewards, some of whom were said to be German reservists. This action, however regrettable on account of the delay it caused, appears to have been reasonable, as otherwise complications might have arisen which would have seriously interfered with the proposed programme. It was held that the ship should be manned entirely by American citizens; for, it was pointed out, if she had sailed with Germans in her crew, it might have caused friction and the detention of all these men in either England or France as prisoners of war. The *Red Cross,* formerly the Hamburg-American liner *Hamburg,* is now painted all in white, with a broad red stripe extending the length of the vessel and large red crosses on her white smoke-funnels. She carries 30 surgeons, 120 nurses, and an enormous amount of field hospital stores. The surgeons are in charge of Major Robert U. Patterson, of the U. S. Army Medical Corps, and the chief nurse is Miss Helen Scott Hay, who has had an unusually extended experience.

The *Red Cross* finally sailed on Sept. 13. It is announced that the 11 Massachusetts nurses have been assigned to duty in England.

BOSTON AND NEW ENGLAND.

HOSPITAL BEQUESTS.—The will of the late Eleazer D. Chamberlin, of Newton, Mass., who died at Concord, Mass., on Aug. 7, was filed on Sept. 5 in the East Cambridge probate court. It contains a bequest of $10,000 for the Boston Instructive District Nursing Association.

The will of the late Edward J. Walsh, of Boston, contains a bequest of $500 to the Boston Lake Shore Home at Sharon, Mass., and includes the Boston Children's Hospital among the residuary legatees.

THE CASES OF INFECTIOUS DISEASES reported to the Board of Health for the week ending Sept. 8, 1914, were as follows: Diphtheria 28, of which 2 were non-resident; scarlatina 12, of which 2 were non-resident; measles 18, of which 6 were non-resident; typhoid fever 16, of which 3 were non-resident; tuberculosis 28.

The death-rate for the week was 14.45.

NEW YORK.

ANTITYPHOID VACCINATION.—In an article on antityphoid vaccination in the *Monthly Bulletin* of the State Health Department Dr. W. H. Park, consulting bacteriologist, enumerates the following as among the persons who may be designated as particularly to be benefited by immunization: (1) Physicians, hospital internes, medical students, male and female nurses, and orderlies in hospitals; (2) members of families among whom there are cases of typhoid fever, or among whom typhoid carriers have been proved to exist, or those exposed to the disease or who expect to be brought in contact with it; (3) persons who expect to travel or settle in places which are habitual foci of typhoid; (4) those living in regions where typhoid is prevalent; (5) persons engaged in engineering or construction work necessitating living in camps; (6) vacationists, especially those visiting neighborhoods where the water and milk supply is not under competent sanitary control; (7) the members of all military or naval organizations.

BIRTH REGISTRATION.—In the annual report of Dr. G. W. Goler, health officer of the city of Rochester (population 235,000) an earnest plea is made for better birth registration, in view of the fact that a study of death certificates for infants under one year shows that over 7% of

Boston Med. &

births are unreported. A table of cases and deaths of diphtheria for eighteen years brings out the tendency of the disease to increase in cycles of about six years, and also shows that the case fatality varies inversely with the prevalence, as has been demonstrated to be true in typhoid fever and measles. In commenting on the fact that 88% of school children had carious teeth, reference is made to the dental hygiene practised among the ancient Egyptians. The crude death-rate for Rochester was 14.7 and the infant mortality rate (the lowest of any city in the state), 97—the admirable result of Dr. Goler's years of indefatigable effort.

Saratoga County Tuberculosis Hospital.—The buildings of the new Saratoga County Tuberculosis Hospital are now approaching completion. Dr. G. S. Towne, health officer of Saratoga Springs, has been elected president of the board of managers, and Dr. M. E. Leary, health officer of the town of Gates, and superintendent of the Monroe County Tuberculosis Hospital, has been engaged as consulting expert to advise the board concerning the equipment and administration of the institution.

Hospital Bequest.—By the will of the late Mrs. Emilie Huber of Brooklyn, N. Y., $25,000 each is left to St. Catharine's Hospital and the German Hospital, Brooklyn.

Mortality for Week Ending Sept. 5, 1914.—The mortality during the past week was considerably above that of the week previous, the death-rate jumping over one-half a point per 1000 of the population. Compared with the corresponding week of last year the most notable feature of the week's mortality was the large increase in deaths from tuberculosis, violence and from causes other than those generally styled prominent. The increased mortality from pulmonary tuberculosis was distributed among all the boroughs, each borough showing a considerable increase over that of last year. The cause of this increase was probably due to the high temperature on several days during the week hastening the deaths of many of the sufferers from this dreaded disease. There were 25 more deaths from violence, each borough showing an increase, the greatest increase being in the Borough of Brooklyn. Typhoid fever showed an increase of 13 deaths over the figures for the corresponding week of 1913.

Viewed from the point of age grouping the mortality of infants under one year was slightly higher. That of the age groups between five and sixty-five years being considerably higher, whilst that of the old people remained approximately the same.

The mortality for the first thirty-six weeks of this year was 14.05 per 1000 of the population as against a rate of 14.33 for the corresponding period in 1913, a decrease of .28 of a point.

It is hoped that this low mortality will continue during the remainder of the year. If it does it will mean a saving of 1563 lives compared with the number of deaths reported during the year 1913.

Abolishing Rabies.—Some weeks ago, owing to the prevalence of rabies in certain sections of the city, and recognizing the inadequacy of existing municipal ordinances bearing on the subject, the Committee on Infectious Diseases of the Advisory Council of the Department, recommended the adoption of an amendment to the Sanitary Code, requiring that all dogs which appear on public highways and in public parks or places, should be muzzled. The proposed ordinance was adopted at a meeting of the Board of Health, held on July 28, 1914.

In view of the drastic character of the new law, the department decided, in fairness to dog owners to give them ample time to adjust themselves to its requirements. Through the public press announcement was made that individuals would not be prosecuted for failure to comply with the muzzling ordinance until September 15.

Since the adoption of the muzzling ordinance, the department has been flooded with letters from interested citizens, an overwhelming majority of whom have commended the action of the Department, while a few, holding contrary views, have expressed themselves in opposition. Extracts from the letters received are here presented, showing the divergent views of citizens.

"Your recent order that all dogs, whether in leash or not, in the public streets, public buildings, apartment houses, etc., must be muzzled, is certainly a step in the right direction and worthy of the highest commendation by all fair-minded citizens of this great city."

"I write to thank you most cordially for the statement you have made in reference to the appalling dog nuisance. I have paid over to this city in cash, for taxes and assessments, more than $500,000. I refer to this fact merely to indicate that I am personally entitled to some consideration. On two occasions I have had my clothes torn by stray dogs, howling, snapping, and biting at me—both of these in upper Manhattan. I should hate to lose my life from the bite of a mad dog in a city which in so many ways, conditions, and regulations, leads all the great cities of the world."

"Of what use are dogs in the city? Perhaps of no more good than to be at least one true friend to mankind, and that is more than one can say of the majority of the human animal, male or female. There is more harm than good done by muzzling a dog and the only animal which should be muzzled or put on a leash is the animal called man."

"Surely an occasional rabid dog will not lead you to condemn the whole race any more than an occasional insane human leads us to ask what is the use of any of us."

These letters show the trend of popular thought on a subject to which the department of health has devoted serious attention. For a straightforward, scientific statement of the rabies situation in this city, the reader is referred to the June issue of the department's *Monthly Bulletin*.

Current Literature

NEW YORK MEDICAL JOURNAL.

AUGUST 22, 1914.

1. NOGUCHI, H. *Practical Application of the Luetin Test.*
2. *MCNEIL, A. *Present Status of the Complement Fixation Test in the Diagnosis of Gonorrheal Infections.*
3. FEDERN, P. *The Infantile Roots of Masochism.*
4. PRICE, G. E. *Clinical Types of Adiposis and Lipomatosis.*
5. JABLONS, B. *Medical and Bacteriological Experiences During the Late Balkan War.*
6. GOOD, R. H. *Removal of Two Nails from Bronchi of Child Two Years Old.*
7. NEUHOF, S. *Clinical Investigation of Gastric Neuroses with Vago-excitative Characteristics.*
8. FRIESNER, I., AND BRAUN, A. *The Functional Tests of the Static Labyrinth in Neurological Diagnosis.*
9. REHFUSS, M. E. *A Modified Gastroduodenal Tube.*

2. McNeil gives a report of results obtained with the complement fixation test for gonorrhea at the serological laboratory of the New York health department. The report is based on 5381 specimens of blood submitted for examination. These findings do not modify in any particular the conclusions published by the writer in 1912 which were in part as follows: A positive reaction denotes the presence or recent activity in the body of a focus of living gonococci. A negative reaction does not exclude gonococcus infection but is of considerable importance. A strong positive reaction is not to be expected earlier than the fourth week, and then only in very acute cases with some complication, and the reaction does not entirely disappear until seven or eight weeks after cure. A positive reaction is not obtained if the disease is limited to the anterior urethra. [L. D. C.]

AUGUST 29, 1914.

1. KAPLAN, D. M. *General Paresis.*
2. BISHOP, L. F. *Digitalis in Chronic Diseases of the Heart.*
3. ALLPORT, F. *Conservation of Vision.*
4. MOORE, J. W. *Surgical Treatment of Infantile Paralysis.*
5. MAYS, T. J. *Is the Consumptive Crusade Becoming a Burlesque?*
6. ROSENBAUM, G. *Röntgen Diagnosis in Fractures of the Cranium in Children.*
7. BOOKMAN, M. R. *Congenital Malformations of the Rectum and Anus.*
8. LANCASTER, W. B. *The Injurious Effects of Light on the Eyes.*
9. RUBIN, G. *Placental Blood for Transfusion.*
10. SHEAFF, P. A. *An Aid in the Use of the Allis Inhaler.*

[L. D. C.]

JOURNAL OF MEDICAL RESEARCH.

JULY, 1914.

1. MCNEIL AND TAYLOR. *Coccidioides Communis and Coccidioidal Granuloma.*
2. *FROTHINGHAM AND HALLIDAY. *The Effect of Quinine on Rabbits Inoculated with Rabies.*
3. *SLYE. *The Incidence and Inheritability of Spontaneous Tumors in Mice.*
4. WEIL. *Studies in Anaphylaxis.*
5. FROTHINGHAM, C., JR. *A Glomerular and Arterial Lesion Produced in Rabbits' Kidneys by Diphtheria Toxin.*
6. KLOTZ-LIPO. *Amyloid Degeneration.*
7. WESTON. *Serum Cholesterin and the Wassermann Reaction.*
8. KARSNER, AMIRAL AND BOCH. *A Study of the Influence of Splenectomy and of Certain Organs and Organ Extracts on the Hemopsonins of the Blood Serum.*
9. WHITE, *Some Experiments in Anaphylaxis with the Lipoids of the Tubercle Bacillus.*
10. *HENRICI. *The Staining of Yeasts by Gram's Method.*
11. SLYE, HOLMES AND WELLS. *The Primary Spontaneous Tumors of the Lungs in Mice.*
12. BROWN AND SMITH. *Notes on Two "Atoxic" Strains of Diphtheria Bacilli.*
13. *MCCLURE. *A Cholesterin-Heart Antigen Proposed by Walker and Swift.*
14. ANDERSON. *The Reaction of the Guinea-Pig to the Virus of Typhus Fever.*
15. BROWN, HEISE AND PETROFF. *An Attempt to Immunize Guinea-Pigs Against Tuberculosis by the Use of Graduated, Repeated Doses of Living Tubercle Bacilli.*
16. *LYALL. *On the Classification of the Streptococci.*
17. *LYALL. *Observations on Hemolysin Production by the Streptococci.*
18. SCHERN. *New Serum and Liver Substances as Levulose in Trypanosomiasis.*

2. Frothingham and Halliday were unable to show any curative effect from subcutaneous injections of quinine bisulphate or quinine and urea hydrochlorid in rabbits showing symptoms of rabies, following intracranial and intramuscular injection of Street virus. The quinine preparations produced in all instances local necrosis and sloughing.

3. Slye divides the life of the mouse into four stages; *i.e.* infancy, adolescence, prime or reproductive life and later life. The chief causes of death in the latter cycle are senile atrophy, chronic Bright's disease, obesity and cancer.

Cancer appears as a mode of growth and entirely separated from infection, which is rarely found in later life. Neoplastic growth, however, takes place at the point of overstrain, *i.e.* in the reproductive organs of the mated. Furthermore this point is exemplified by the frequency of cancer in the mammary glands most commonly used for suckling.

In several instances the growth was shown to remain stationary and relatively inactive during reproductive life, only to assume signs of malignancy after that period of life had passed. Striking series of inheritance were shown.

10. Henrici shows that yeast cells retain Gram's stain more firmly than do the common Gram-positive bacteria. Moreover the cytoplasm of the yeast cell presents, unlike bacteria, certain Gram-positive granules during the decolorizing process.

13. McClure has performed complement fixation reactions in parallel studies upon syphilitic and non-syphilitic sera by means of (1) cholesterin-heart and (2) syphilitic liver antigens. A higher percentage of positive findings in clinically non-syphilitic cases resulted from the use of the former. The errors resulting from the latter were explained by the presence of pyrexia and carcinoma. On the whole the readings

Boston Med. &

were found much more delicate from the cholesterin-heart antigen except in untreated cases of secondary, tertiary or latent syphilis. For the same reason the use of this method is unsatisfactory as a check to treatment, on account of the persistence of positive reactions after disappearance of the reaction from the syphilitic liver antigen, which appears to follow the course of clinical changes more closely. As a result McClure finds that the antigen, proposed by Walker and Swift, should be considered still in the experimental stage.

16. By means of new cultural methods Lyall has been able to show complete and partial hemolysis and absence of hemolysis in the various groups of streptococci. By this means, aided by the reactions of fermentation to inulin, salicin and raffinose, he has formed a constant and apparently reliable classification of streptococci. The true streptococci may be said (1) to be hemolytic—the group represented by streptococcus pyogenes—(2) to form methemoglobin—represented by streptococcus viridans and variants—or (3) to be indifferent. The latter group is made up of the streptococcus fecalis and other streptococci.

17. Lyall also presents a method for the quantitative determination of hemolysins. This property is closely associated with the bacterial body, insoluble, not an enzyme and thermolabile. An interesting note is that salvarsanized serum presents a markedly increased inhibitory power on the hemolytic action of streptococci. [L. H. S.]

ANNALS OF SURGERY.

AUGUST, 1914.

1. *DE PAGE, A. *War Surgery.*
2. *WITZEL, O. *Amputations.*
3. V. KUZMIK, P. *Amputation of the Hand.*
4. BINNIE, J. F. *Amputations of the Leg.*
5. *LEXER, E. *Free Transplantation.*
6. *ULLMAN, E. *Tissue and Organ Transplantation.*
7. *MAYO, W. J. *Chronic Ulcers of the Stomach and Duodenum.*
8. *HARTMANN, H., AND LECENE, P. *Ulcer of the Stomach and of the Duodenum.*
9. DE QUERVAIN, F. *The Diagnosis of Gastric and Duodenal Ulcer.*

1. The president's address contains several practical suggestions to meet the awful suffering and mutilation of the modern battlefield: The instruction of the soldier in asepsis and antisepsis, materials for first-aid dressing carried by every soldier, performance of only precautionary measures on the field and at the stations at the front, the performance of operations judged indispensable at the hospitals of the second line where experienced surgeons should be placed, the appointment of civil consulting surgeons whose chief duty would be to oppose the performance of all operations of which they did not clearly see the urgency. De Page closes with an appeal for the abolition of shrapnels on the same ground as explosive bullets. (It is interesting at this time of war to note the selection of this title for presidential address four months ago and also that the president is a Belgian.)

2. Witzel after showing that the right to the judgment that a limb cannot be saved pre-supposes exceptional familiarity with surgical progress and after dwelling on the preparation of the patient for amputation, considers broad principles (hemostasis, anesthesia, sharp separation of tissues, avoidance of drainage wherever possible). One of the chief requisites for usefulness is that the stump be painless. Witzel then considers the treatment of the bone-end, pulling down and high section of nerves and early post-operative massage and exercises.

5. Lexer's comprehensive communication opens with general considerations regarding the various ways in which grafts may heal, the fate of auto-, homo-, and hetero-plastic grafts of various tissues, and technical requirements for success. He then discusses his experience and that of others in transplanting various tissues (skin and epidermis, mucous membrane, fat, muscle, nerve, vessel, tendons, fascia, periosteum, peritoneum, bone, cartilage, joints, total limb and organs). He prefers skin flaps to epidermal strips on the fingers and face. He has never used homoplastic skin transplantation in the human without some subsequent objection and doubts the usefulness of this method even with mutual immunization of donor and recipient. The field of usefulness of fat is great. Lexer considers free fat transplantation for the repair of dural defects with coexisting brain injury or pathological pia the method of choice. He emphasizes the importance of early mobilization in tendon transplants. He favors the preservation of periosteum and medulla in bone grafts.

6. Ullman's scholarly paper deals with transplantation of blood vessels, heart, thyroid, parathyroids. adrenals, hypophysis, ovaries, testicles, heterosexual transplantation, kidneys, spleen, pancreas, intestine (large intestine into stomach, stomach into small intestine, stomach into large intestine, small intestine into stomach, unpedunculated gastric flap into small intestine, small intestine into colon) and prostate. The paper is a record of his own experience and that of others in the transplantation of various organs into various situations, auto- homo- and heteroplastically, in animals and in the human in some instances. Briefly, some of the experiences in the human have been the use of veins for urethra, negative results in thyroid transplantation, homoplastic parathyroid transplantation without hope (Lanois), the prevention of castration atrophy, perpetuation of menses and even preguancy and birth after ovary transplantation and four unsuccessful attempts at heteroplastic kidney transplantation usually into the arm.

7. Of the latest 1000 cases of gastric or duodenal ulcer at the Mayo clinic 73.8% were duodenal. In this same series about 75% of cases were male whether ulcer was gastric or duodenal. Mayo advocates gastrojejunostomy in addition to excision of ulcer. In performing gastrojejunostomy for duodenal ulcer the temporary pylorus-blocking sutures of Moynihan have been used. In cases without obstruction the methods of Wilms and Kolb have been successfully employed. At least 95% of all cases of gastric ulcer will be cured or greatly relieved by operation; 98% of the duodenal cases. A small number have been re-operated for recurrent ulcer. In each instance the lesion was gastrojejunal.

8. Hartmann and Lecene challenge the statement that duodenal ulcer is more frequent than gastric ulcer, finding in France, at least, only one of the former to eight or ten of the latter. They regard the "pyloric vein" as an untrustworthy landmark of the pylorus. They believe the symptoms pointed out by Moynihan as indicating duodenal ulcer are merely symptoms of pyloric spasm whether due to ulcer of stomach or duodenum or other cause. They place little confidence in pathologic reports based on extemporaneous frozen sections. They believe the frequency of development of cancer on ulcer has been exaggerated. They emphasize the importance of fluoroscopic examination. They consider surgical treatment of several complications (perforation, hemorrhage, cicatricial stenoses, perigastritis) and then of uncomplicated ulcers of stomach, near and distant from pylorus, and of duodenum. In dealing with fistulae from subphrenic abscess resulting from perforation of duodenal ulcer, they advocate gastroenterostomy with exclusion of pylorus. In dealing with similar lesions resulting from gastric perforation, resection or immediate suture or jejunostomy may be tried. Although they have not practiced pyloroplasty for cicatricial stenoses, they are not in favor of the operation. They perform simple gastrojejunostomy or associated with pylorectomy. They do not advocate pyloric exclusion of von Eiselsberg. They maintain that a gastro-intestinal orifice well covered with mucous membrane without cicatricial tissue cannot become obliterated

even if nothing passes through it. In their experience gastro-enterostomies performed in cases without stenosis or alimentary stasis have remained patent and functional. [T. W. H.]

THE LANCET.

AUGUST 8, 1914.

1. RYALL, C. *Cancer of the Uterus.*
2. *KIRTH, A. *The Nature of Peritoneal Adhesions.*
3. *LLEWELLYN, J. L., AND JONES, A. B. *Osteo-Arthritis of the Hip. Diagnosis in the Early Pre-Osteophytic Stages.*
4. *MCCONNEL, H. W. *The After-care of the Consumptive.*
5. HARPER, P. *Treatment of Yaws by Intravenous and Intramuscular Injections of Salvarsan and Neosalvarsan.*
6. *CARVER, A. E. *Pneumosan in the Treatment of Pulmonary Tuberculosis.*

2. Kirth discusses in a scholarly way the question of peritoneal adhesions, showing that many of these are of prenatal origin and part of a widespread biological process, affecting particularly the development of the human peritoneal cavity and that of animals nearly allied to man.

3. Llewellyn and Jones describe the early symptoms, subjective phenomena such as articular pain, local tenderness, referred pain in osteo-arthritis of the hip in its early stages. They discuss early signs such as alterations in gait and attitude, limitation of motion, etc. They urge early diagnosis and treatment.

4. McConnel states that the objectives of after-care of a consumptive are (1) to prevent relapse, (2) to combat fear of infection among others, (3) to look after the home and the family while the bread-winner is away and (4) to prevent development of the chronic loafer. He discusses the ways and means of obtaining these objects by means of local town and city forces and voluntary forces. The latter he particularly favors. He urges further development of after-care work.

6. Carver describes the effect of "pneumosan" in pulmonary tuberculosis. As he does not state what pneumosan is, or what it is supposed to do, the article is practically worthless. [J. B. H.]

AUGUST 15, 1914.

1. BATESON, W. *Heredity.*
2. RICHARDSON, C. W. *Congenital Atresia of the Post-Nasal Orifice.*
3. BANISTER, J. B. *Pregnancy Complicated by Severe Morbus Cordis: Two Cases Treated by Hysterectomy Under Spinal Anesthesia.*
4. HORNE, J. *Gun Deafness and Its Prevention.*

[J. B. H.]

BRITISH MEDICAL JOURNAL.

AUGUST 8, 1914.

BRITISH MEDICAL ASSOCIATION.

1. THOMSON, J. A. *Vis Medicatrix Naturae.*

SECTION ON MEDICAL SOCIOLOGY.

2. GORDON, J. *Introductory Remarks.*
3. *CHALMERS, A. K., ET AL. *Discussion on the Responsibility of the State in Connection with Venereal Disease.*
4. COLLIE, J. ET AL. *Discussion on State Medical Service v. A Panel System.*

2. Chalmers presents statistics from Glasgow showing the excellent results obtained in prompt and aggressive treatment on a large scale of ophthalmia neonatorum of gonococcal and non-gonococcal origin and also in cases in which syphilis was a factor. Pontoppidan describes in detail the methods used in Denmark. McIlroy urges that the state spend as much on venereal disease as on tuberculosis.

[J. B. H.]

AUGUST 15, 1914.

BRITISH MEDICAL ASSOCIATION.

SECTION ON MEDICAL SOCIOLOGY.

1. *MACKENZIE, W. L. ET AL. *Discussion on the Duty of the State Towards the Early Environment of the Child.*
2. SANDEMAN, C. ET AL. *Discussion on Medical Certification Other than Lunacy Acts.*
3. LEBTEL, A. *The Serum Diagnosis of Pregnancy and of Cancer: A Critical Study of Abderhalden's Method.*

1. Mackenzie discusses ante-natal care of children, safeguarding the mother and child at birth, health visiting, infant clinics and milk depots, and "pre-school age" clinics. Galloway takes up the care of the child from the point of view of eye sight and defects in eye sight and their prevention, while Wallace discusses the subject from the dental point of view.

[J. B. H.]

WIENER KLINISCHE WOCHENSCHRIFT.

NO. 17. APRIL 23, 1914.

1. *FARARGER, H. *Experimental and Clinical Experience with Chronic Tobacco Poisoning.*
2. ENGLE, K., AND HOLITSCH, R. *Differential Diagnosis of Substernal Goiter.*
3. NEUGEBAUER, H. *Hereditary Syphilis and Disease of the Aorta.*
4. LORENZ, H. *Subdeltoid Hygroma.*
5. PRIESEL, A. *Varices in the Thoracic Duct.*
6. ADLER, A. *"Child Psychology."*

1. The author finds experimentally that nicotine is probably the sole substance responsible for the clinical symptoms caused in humans by tobacco smoking. He cites twenty-one cases in his experience showing tobacco-heart poisoning. The symptoms run from palpitation in the mild cases to myocardial insufficiency and death in the severe. The abuse of cigar smoking affects detrimentally the senses and memory; cigarettes irritate the nervous system. Further, certain gastro-intestinal symptoms depend on nicotine poisoning,—from loss of appetite to gastric ulcer. He believes that certain cases of myocardial weakness from tobacco do not have arteriosclerosis, though this is common in excessive smokers. [F. S. K.]

NO. 18. APRIL 30, 1914.

1. STERNBERG, C. *Further Study of the Wassermann Reaction.*
2. MEYER, K. *Method of Auscultation of Heart Through the Nose and Mouth.*
3. HUTTER, F. *Technic of Tonsillotomy and the Anatomy of this Region.*
4. DECHER, J. *Certain Post-operative Complication, after Gall-stones.*
5. *HOFSTÄTTER, R. *"Sexus Anceps."*
6. V. ALDOR, L. *The Chemistry of the Stomach with Gall-stones, and the Importance in Treatment.*

5. The author reports in detail with photographs a case of doubtful sex. [F. S. K.]

Boston Med. &

ANNALES DE L'INSTITUT PASTEUR.

VOL. XXVIII. No. 7. JULY, 1914.

1. PETTIT, A. *Action of Diphtheria Toxin Upon the Rat.*
2. OZAWA. *Morphological and Biological Study Upon the Trypanosome Pecaudi.*
3. FERNBACH, A., AND SCHOEN, M. *Some Products of the Decomposition of Dextrose in an Alkaline Medium.*
4. ROSENBLATT, M. AND MME. *Action of Acid Upon Alcoholic Fermentation.*
5. *CHAUSSÉ, P. *Can the Tubercle Bacilli Be Thrown Out in Moist Respiratory Particles?*
6. KIESEL, A. *The Influence of the Reaction of the Media Upon the Action of Inulase of Aspergillus Niger.*

5. Chaussé has carried on a series of experiments, chiefly with guinea-pigs as the animal for study, in order to see if the moist particles expelled from the mouth of a tuberculous patient are capable of producing infection in another without first drying and becoming pulverized. He controls his experiments apparently quite carefully with other experimental studies. His results are quite consistent.

In conclusion he feels that tuberculosis is passed from one person to another only by means of moist particles directly inhaled in very rare cases. The bronchial muco-pus acts as an agent of defense for the rest of the lung and digestive tube and also adjoining mucous membrane. Mucus in the saliva increases this protective property of rolling up the bacilli and helping in their expulsion. To emphasize the difficulty of infection by direct contamination with moist particles one should compare his results with the experiments in which dried bacilli were exposed to the animals. [C. F., Jr.]

REVUE DE MÉDECINE.

JULY, 1914.

1. *LABBÉ, M. *The Treatment of Diabetes by the "Dry Vegetable" Regimen.*
2. BENON, R. *Traumatic Shock of Asthenia.*
3. LE DAMANY, P. *Hepatic Edema.*
4. DOBROKHOTOW, M. *"Sciatique Radiculaire"—A Study of the Distribution of Segmental Sensibility of the Inferior Extremities.*

1. Labbé recommends a regimen of dry legumens as a substitute for the "oatmeal diet" and "milk cure" during the course of treatment of diabetes. The diet consists of dried legumens, butter, eggs and gluten bread. This diet is better digested and more palatable than the oatmeal and milk cures. It contains a high percentage of nitrogen, which appears to be more easily assimilated than that of cereals or milk. This treatment is of great value in cases of mild and moderately severe diabetes, but is of greatest importance in severe cases, preventing nitrogenous malnutrition and acidosis. It tends to reduce glycosuria and combat coma. The treatment generally lasts three to four days at intervals of ten days to two weeks; but may, if tolerated by the patient, be prolonged for two weeks or more. [L. H. S.]

THE SEI-I-KWAI MEDICAL JOURNAL.

AUGUST, 1914.

1. *TAKAKI, Y. *Some Facts of Acute Appendicitis.*
2. SEWAKI, H. *The Poison of Earthworms.*
3. OGA, F. *Epidemic Typhus in Yokohama in 1914.*

1. Takaki discusses post-operative complications, the condition of the field of operation, and the diagnosis of appendicitis. The principal conditions to be differentiated he considers are trauma, tuberculous peritonitis, pneumonia, cholecystitis, typhoid, and salpingitis. He believes the pulse-rate to be a valuable diagnostic sign. [R. M. G.]

Miscellany.

DR. HASKET DERBY.

A PERSONAL TRIBUTE.

WHEN DR. DERBY began practice in Boston, fifty-two years ago, specialties were so infrequent as to be singular, even questionable. The name oculist could not be attached to the usual affix of M.D. The eye was the only recognized single organ; and as we still hold, was influenced by the brain and the kidney The oculists in the community had been evolved from general practitioners.

Doctor Derby never practiced medicine. He was a pure specialist from his beginning; and being one of the earliest to divert his business from his family and home, he occupied an office in another street. This was novel and unusual.

Social connections and business tact combined to give his real merits an earlier recognition and success than usually befalls the young doctor. It was true that two and a half years of special study of the eye in Germany and Holland had given him unusual opportunity for completed knowledge. But he was successful from the beginning, soon had a good practice and income, and kept it for forty-eight years.

Dr. Derby was a man of very strong religious convictions; and he gave unquestioning faith to the assurances of his church. This influenced his professional character and practice. He was conscientious; his medical dicta were conservative, but unyielding. What he knew, he knew he knew; and there was no latitude allowed. The effect of positive statement to the patient is great; and the sufferer who accepts is happier and better off than he who doubts, questions or changes.

Dr. Derby was considerate of the poor, and gave long years of gratuitious hospital service; but he also was eminently just, and this made him firm in claiming his dues when the patient could afford them. He was a bold and earnest assailant of the abuse of medical charity. He often questioned the applicant for free treatment at the Eye and Ear Infirmary as to his means, and sometimes refused him as a free patient. This vast abuse, which impoverished the doctor, would be lessened were other practitioners as firm in claiming what they believed was right. No such inquisitional duty should ever be imposed on the hospital doctor, but it should be taken up by a special officer of each hospital.

The writer of this notice, being retired by age, and thinking himself in a position to judge im-

partially, wishes to call attention to the circumstance, that every doctor connected with a hospital makes his charity practice primary and his paying practice secondary. He gives up the fresh energy of his morning hours to his charity work, and has only the later and tired hours to give to those who pay him for his services and support him.

The subject of this sketch was a man of polished manners and genial conversation. He was a pleasant companion. He made warm friends and kept them. He had a cultivated taste for English literature, and he collected a fine library of such classics. He was familiar with German and French, and read both with ease. He was fond of nature, and developed the scenic features of Mt. Desert. There he was also instrumental in building a rural church, which he named Saint Sylvia. He paid scrupulous attention to bodily exercise, and was for years a regular attendant of a class in gymnastics. His exact habit of mind led him to keep and preserve copious notes of each one of his patients.

Dr. Derby was born in June, 1835, and died in August, 1914. He had entered upon his eightieth year. He led a serviceable life up to old age, and had little illness. About four years before his death, infirmities settled on him which obliged him to retire from practice.

Dr. Derby was graduated from Amherst College in 1855; he entered the Harvard Medical School and received the degree of M.D. in 1858. During the last year of his medical studies, he served as house surgeon of the Massachusetts General Hospital. He then at once sailed for Europe as ship's doctor of a sailing craft, and had a voyage of twenty-eight days.

He studied general medicine for eighteen months, and then took up the eye first in Vienna under von Arlt and Jaeger; then in Berlin under von Graefe; in London, Bowman and Critchett, Greenfield and Hutchinson; in Utrecht, Donders; and Paris under Dismares and Sichet. To these studies of the eye he devoted two years and a half.

While in Europe the Civil War broke out, and he wished to come home to enter the military service; but his parents wished him to complete his studies. When he returned, he volunteered and served under the Sanitary Commission at Fortress Munroe.

He settled in Boston in 1862. He was one of the surgeons of the Massachusetts Charitable Eye and Ear Infirmary for thirty years. He founded the Eye Department of the Carney Hospital in 1877, and retained his connection there thirty-seven years.

Dr. Derby was one of the founders and later chairman of the New England Ophthalmological Society. The American Ophthalmological Society was originated by Dr. Derby and Dr. Henry D. Noyes, of New York. Dr. Derby was later its president. He was many years a member of the Deutsche Ophthalmologische Gesellschaft.

Dr. Derby was a lecturer on the eye at the Harvard Medical School for a short period. Clinically, he taught for years in hospitals. He filled many public offices: for ten years a trustee of the Children's Institutions Department; he was one of the original board of visiting physicians of the Danvers Hospital for the Insane.

Dr. Derby went often to Europe, whence he brought home the newer ideas in his specialty and novelties in his armamentarium. He was especially fertile in employing new machinery.

In 1868, he was married to Sarah Mason, of Boston, who survives him. They had eight children, of whom six are living; namely, Eloise and Dr. George S., of Boston; S. Hasket, of San-Francisco; Robert M. and Augustin, of New York; and Arthur L., of New Orleans.

DAVID W. CHEEVER.

APPOINTMENTS.

DR. WILLARD J. DENNO and CHARLES W. BERRY of New York have been appointed sanitary supervisors, and DR. WILLIAM T. POWER of New York, lecturer on diseases and disorders of the eye, in the State Department of Health.

DR. FRANKWOOD E. WILLIAMS, first assistant physician, Psychopathic Hospital, Boston, has been appointed executive secretary of the Massachusetts Society for Mental Hygiene.

RECENT DEATHS.

DR. GEORGE IVISON ROSS, a registered physician of Canton, Mass., died in that town, September 13, aged 67 years. After practising medicine at Canterbury, Conn., he removed in 1885 to Canton, where he had since practised. He is survived by two daughters and a sister.

BOOKS AND PAMPHLETS RECEIVED.

Medical Education and the Municipal Hospital, by August Schachner, M.D. Reprint.

A Manual of Practical Hygiene, by Charles Harrington, M.D. Lea & Febiger. 1914.

Diseases of the Skin, by Frank Crozer Knowles, M.D. Lea & Febiger. 1914.

Local Anesthesia, by Prof. Dr. Heinrich Braun. Lea & Febiger. 1914.

On the Classification of the Streptococci. Observations on Hemolysin Production by the Streptococci, by Harold W. Lyall. Reprint.

A Septic Sore Throat Epidemic in Cortland and Homer, N. Y., by Charles E. North, Benjamin White, and Oswald T. Avery. Reprint.

Some Experiments in Anaphylaxis with the Lipoids of the Tubercle Bacillus, by Benjamin White. Reprint.

The Clinics of John B. Murphy, M.D. February, 1914. W. B. Saunders Company.

The practice of Pediatrics, by Charles Gilmore Kerley. W. B. Saunders Company. 1914.

Medical Gynecology, by Samuel Wyllis Bandler, M.D. W. B. Saunders Co., 1914.